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VOLUME 28

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INTERNATIONAL PROJECTIONIST

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AARON NADELL, *Editor*

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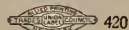
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MONTHLY CHAT

ELSEWHERE herein will be found a detailed summary of the remarkable and unprecedented variety of new developments which inventors and manufacturers in our field brought forward during the year 1952.

Eidophor, Natural Vision, Cinerama, mirrors that reflect light but not heat, magnetic soundtracks, transistors, drive-in size television, television transmission beyond the horizon . . . the reader is referred to the summary on another page for details . . . there has surely been no year like 1952 for technical progress in all the history of our industry!

* * *

If even a reasonable part of all these innovations become standard practice immense changes must come to the projection room and to the projectionist. Eidophor will bring with it a refrigerator and a vacuum pump for the projectionist to manage and maintain. Television of any variety embodies a very large number of new electronic circuits unlike any ever used in the theatre before; Natural Vision entails new interlock equipment; transistors promise to revolutionize practically all our electronic equipment and practices.

* * *

The projectionist naturally cannot hope to make himself a top expert in maintaining all these new devices plus and in addition to the very considerable responsibilities he has now; but he *will* have to acquire the competence to apply "what to do until the doctor comes" first aid in every case, because the show must go on until help arrives, and there is no one in the theatre except the projectionist who can see that it does.

IP pledges itself to do its share. Except only as patent secrecies and similar reticences may hinder, we will ferret out the facts and lay them before the craft in these pages. (See, for example, the detailed account of Natural Vision interlock arrangements elsewhere in this issue.) And any reader who may not see herein exactly what he wants is cordially and most heartily invited to ask for it.

* * *

All of us are going to have to learn "projection" all over again. That art and craft and science is now changing monthly. Like the Queen in Alice in Wonderland we are all going to have to run as hard as we can to stay in the same place. But it is becoming an increasingly valuable place to stay, for with all these new and marvelous developments the projectionist is no longer in the remotest sense an "operator." He is (and becoming more so daily) a very highly skilled, valuable, versatile, and resourceful technician, entitled to be respected and paid accordingly.

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NATURAL VISION— Another Step in the Right Direction

NATURAL VISION'S initial presentation of their Polaroid third-dimension process was placed before the public in Los Angeles on November 26, 1952. The event took place in the form of two simultaneous showings—at the Paramount Theatre, Hollywood, and at the Paramount Theatre in downtown Los Angeles. Combined seating capacity of the two theatres totals 5,000. The picture was "Bwana Devil," an Arch Oboler production for Milton Gunzburg.

Business the first week was beyond anyone's fondest expectations and, as this is written, they are still packing in the cash customers. This influx of paying patrons disproves the opinion, held by many in the trade, that the picture-going public would object to the necessity of wearing special Polaroid glasses in order to view a Natural Vision picture. Objections to date from the payees have been infinitesimal in comparison to the substantial increase in business at these two theatres.

The Natural Vision Process

The theory behind Natural Vision is neither new nor startling. For most of us it actually goes back many, many years. We can all remember stage effects utilizing Polaroid and, in more recent years—about 1936—Pete Smith gave us *Audioscopiks* and red and green glasses with which to look at them.

In the field of amateur photography,

Seeming to prove again that the public of today wants something new, Natural Vision (a system of third-dimension projection that requires patrons to wear Polaroid spectacles), is an SRO sellout at two California theatres. Natural Vision screen quality depends on the skill of the projectionist to a much greater degree than usual since exact superposition of two images is all-important.

By MERLE CHAMBERLIN

Supervisor of Projection, M-G-M Studios, Culver City, California

stereo-realists are becoming quite common-place. Refinements to gear the process to the professional 35-mm show were bound to be worked out. This has been done—not all the way yet, but enough to give us NATURAL VISION.

Photography of the picture in Natural Vision is theoretically geared to duplicate what is seen by our two eyes. The right eye sees the right picture and the left eye the left picture. These images are superimposed upon the brain, resulting in what we accept as a normal, well rounded momentary record of the thing in view.

The Natural Vision camera set-up has two 'eyes' which are represented by two complete cameras. These cameras are not placed side by side; if they were, the distance between lenses would be too great to obtain the necessary illusion. Mirrors are used to correct this condition.

The two cameras are mounted facing each other, appearing as if one lens was recording an image from the other lens.

The image is actually photographed from front surface mirrors which are placed between the lenses at the required angle so that the ultimate photographic records on the negatives in the cameras are as if the same scene were recorded by two cameras 4" apart—4" having been accepted as being the average distance between a pair of human eyes. This naturally results in two separate negatives, either of which is a complete record of the action. The only difference between these two negatives is the slight offset caused by the spacing of the front surface mirrors.

Projecting Natural Vision

Positive prints from these two negatives are then made and that is where we, the projectionists, come in. The projection of Natural Vision or any similar process is of necessity an extremely precise operation. The two prints, either of which can be shown as a separate, normal flat picture, are projected simul-

taneously, which necessitates making provisions for two projectors to operate as one piece of equipment.

Focus, steadiness and light are very important. Any deviation from normal, efficient reproduction results in an unfavorable picture on the screen. The reasons for this condition are many. The two super-imposed pictures are projected through Polaroid filters installed in the portholes. The filter on the right-hand machine takes care of the image for the right eye. The left eye is taken care of by the left projector. Patrons in the theatre (as well as the projectionists in the booth) must wear Polaroid glasses to properly view the picture. Without the glasses the picture becomes an unpleasant double image that is a definite strain on the eyes. Any transposition of film or filter, (right to left—left to right) would force the patron to view the show as though he were cross-eyed

Electrical Interlock

The major preparatory operation in the projection room is the interlocking of the two machines. There are two methods of accomplishing this. The most expensive way is the electrical interlock. It is also the most positive, fool-proof and least dangerous method. A pre-fabricated electrical interlock system requires no 'customizing' for each specific theatre to take care of vertical and horizontal angles, etc.

Electrical interlock is based on selsyn motors, which are best described as rotary transformers. When two of these motors are connected in parallel they assume a position where no current will flow. This position is exactly the same for both motors. If one rotor is turned the other turns to the same position until again no current flows.

The regular drive motors are used on the projectors but one selsyn is also coupled to each machine. These keep the regular motors from drifting apart. If one projector head is tighter than the other and has any tendency to lag, the selsyn on the leading machine will pull the other motor to it. No matter what the condition, outside of a complete stop due to a freeze-up or similar accident, these selsyns will turn together, revolution for revolution. All four motors are thus locked together electrically and operated from one control. After locking, one switch turns everything.

Mechanical Interlock

The mechanical interlock involves the use of a rod or chain to couple the two machines together. It is not practical except with a very few soundheads. With others, angle, speed and hazard to the men in the projection room are important drawbacks of this system. A rotating bar or chain between the machines presents a continual hazard to the projec-

tionists. It is doubly so when we consider the fact that this piece of equipment must be placed at the center, or most important station, in the booth. As used to date, the mechanical interlock calls for operating both motor switches simultaneously, but smoother operation can be realized by wiring both projector motors to one switch.

Interlocking the machines eliminates the changeovers and consequently eliminates the continuous show. To partially offset this condition 5000' reels and 24" magazines are utilized. The picture, as presented in Los Angeles, is screened for approximately 55 minutes, after which there is an intermission of sufficient duration to provide ample time for re-threading the two projectors. There have been very few objections to this intermission from the patrons. There are naturally no objections from management because the theatre receives an automatic concession break.

Natural Vision or any third-dimension system using Polaroid must be projected on a reflective, semi-directional screen. The ordinary matt surface theatre screen will not reproduce the required separation. The two theatres now screening "Bwana Devil" have installed the new Walker Hi-Intensity screen which provides efficient reproduction of both standard and third-dimension projection.

Some Technical Details of Natural Vision

The following details have been abstracted by IP from a technical report on Natural Vision circulated by United Paramount Theatres to its projectionists and managers.

OWING to differences in design of soundheads, all projection rooms cannot advantageously use the same type of interlock. Either the mechanical or electrical interlock may be more practical, depending upon the type of soundhead installed. With most soundheads, the electrical interlock is preferred; these

Conclusions by the writer following several trips to the theatres and discussions with patrons, promoters, projectionists and others interested in the theatre, are as follows:

(a) The industry and press panned the show unmercifully.

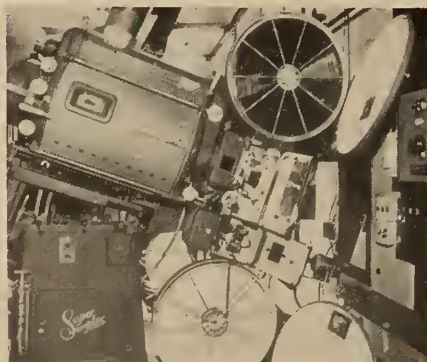
(b) The quality of the prints leaves much to be desired.

(c) The presentation requires each patron to wear glasses.

(d) The viewer must maintain a position within 5° of right angles to the screen or he loses the illusion.

(e) **AND MOST IMPORTANT:** Despite adverse criticism, the two theatres are doing more cash business than at any time in their respective histories—box office receipts are higher than when they presented NAME stage shows.

In view of the foregoing it looks like we, the projectionists, are being handed another tool. The ultimate presentation of Natural Vision depends to a large degree upon the skill of the man in the projection room. Each and every one of us must be ready to take it in stride. Modification of our equipment is comparatively reasonable from the economic standpoint. Assuming that our regular equipment is in top condition, an interlock system and a new screen does the job. So—it looks like we better get ready for another New Deal in projection.



Projector equipped with 5,000-foot reels and interlock selsyn motor—extreme right.

are the kind that have relatively high speed motors which are mounted in front of the soundhead and operate at speeds of from 3450 to 1750 revolutions per minute. If such motors were linked mechanically by any simple contrivance, a high-speed belt, chain or shaft would obstruct a critical location in the projection room. With such equipment, the electrical interlock explained by Mr. Chamberlin herein is far preferable.

Where the soundheads are Western Electric types 206 or 208, the electrical interlock is less practicable and the mechanical interlock more so, and a mechanical arrangement is preferred. In this equipment, a speed-reducing gear exists, interposed between drive motor and the projector. A mechanical interlock can be coupled to the low-speed (360 rpm) side of the drive. A shaft free to revolve, and having a sprocket wheel at either end, is mounted along the front wall of the projection room, under the ports; a sprocket chain from each projector drive runs forward to the two sprockets on the shaft. This equipment is very simple, is not in the way, and does not operate at a dangerous speed.

Assuming that the theatre is normally equipped and its apparatus is in good condition, the following materials are all



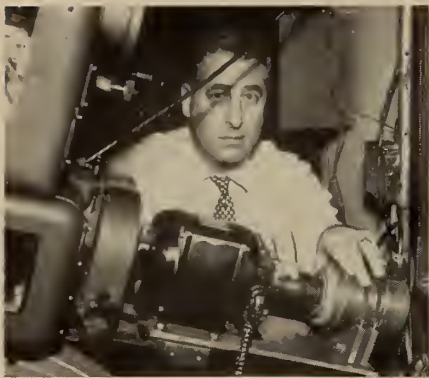
Night in day...

The best moonlight is the light of the noonday sun...

Obvious, of course, to an industry trained in modern cinematographic technics. Equally obvious is the need for infinite care in the choice of film and filters—in keying film and situation... in co-ordinating method and result desired in processing.

To help solve problems such as these, representatives of the Eastman Technical Service for Motion Picture Film are trained to advise—are ready and able to roll up their sleeves and lend a hand wherever necessary.

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Haig Sakajain, chief projectionist for Southside Theatres in California, is shown checking the selsyn installation at the Hollywood Paramount Theatre. He has his left hand on the interlock selsyn motor and his right hand on the regular drive motor. In future installations these will be placed side by side instead of in line, to eliminate alignment problem.

that are needed to convert for Natural Vision three-dimensional projection:

- Interlock, mechanical or electrical (1)
- Metallized-surface perforated projection screen (1)
- 24-inch magazines (4)
- 23-inch projection reels (4)
- Porthole frames for holding polaroid filters (2)
- Polaroid filters (4)—two of these are spares
- Test film, 100 feet long (1)
- Staticmaster brush, for cleaning the filters (1)

Except for the screen, all of these can be purchased from Natural Vision. The screen used in the California showings was the Walker P. M. Polarized High Intensity, sold by National Theatre Supply Co. The Staticmaster brush is manufactured by Nuclear Products Co. of El Monte, Calif. A nuclear material—polonium—is built into its ferrule. The radiation from this metal slightly ionizes the air, neutralizing the static electricity that causes dust to cling to surfaces.

Electrical Interlock Installation

The electrical interlock kit consists of the following:

- Connecting cable (1)
- General Electric selsyn motors (2)
- Sprockets, to keep selsyn speed below 1200 rpm (4)
- Lengths of sprocket chain (2)
- Motor mounting plates (2)
- Motor mounting bolts (12)

The two holding bolts at the left side of each drive motor are removed; two of the long bolts furnished are substituted—threaded up from the bottom on the regular motor bracket—and tightened; the motor mounting plate is slipped on these protruding bolts and fastened to them (after aligning) with washers and nuts.

Each selsyn motor is then loosely

mounted on its mounting plate and sprockets installed on the selsyn motor shaft and on the drive motor shaft (large sprocket on the selsyn). The silent-chain connection between selsyn sprocket and drive-motor sprocket is installed and adjusted, and the selsyn motor mounting bolts are then tightened down.

Selsyn motors are inter-connected by means of the electrical cable supplied.

Both projectors are turned by hand several times as necessary until each is in a position meeting these three requirements: (1) intermittent movement has just turned; (2) shutter is straight up and down, and (13) Allen set screws on selsyn motor are straight.

With projector positions synchronized as above, the selsyns are energized by plugging in the AC plug of the electrical cable that connects them. The projectors will now remain synchronized. If the position of one is changed by hand, the selsyns will automatically make the same change in the position of the other; in operation, if either motor lags the selsyns will pull it ahead.

(When the theatre is closed down at night the selsyns are de-energized by unplugging the cable.)

Projection Room Changes

Aside from installation of the interlock, whether mechanical or electrical, the following changes are necessary in all projection rooms:

The regular drive motors are wired to a common switch so they will start and stop together. If these motors are not switched simultaneously a serious strain

would be thrown on the interlock system.

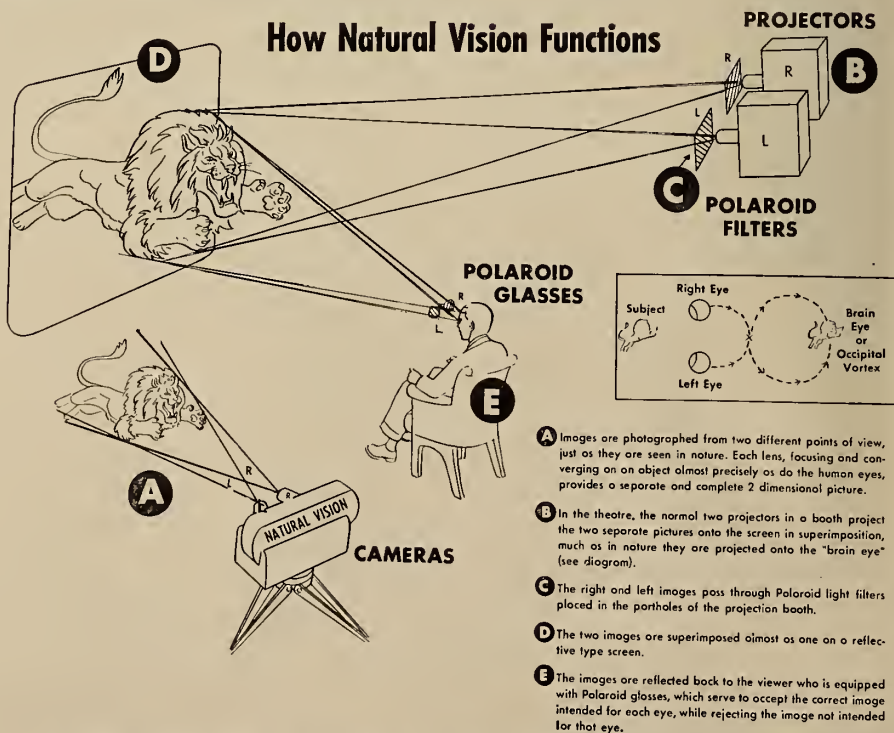
The 24" magazines are installed. If the projector pedestal interferes with the installation of the lower magazine, the latter must be offset for clearance. A wedge for this purpose must be made up in a local machine shop.

The twin images of the third-dimension screen image are displaced on the screen by exactly the proper distance only if projector alignment is perfect. To obtain this condition of alignment, short loops are made from the test film furnished, and projected simultaneously. Projection light is reduced to a minimum to prevent warping of the film. The projectors are then realigned until the two sets of lines projected from the two test loops superimpose perfectly. If absolute perfection cannot be obtained it is at least necessary to make certain that lines from the left projector stay to the left of lines from the right projector. A reversal would produce serious eyestrain; any imperfection at all of alignment produces some eyestrain.

The porthole filters are installed. Each filter frame consists of an upper bar with rings, and a lower bar with clips. The location of the center of the light beam in the projection port is found, and the upper bar so mounted above the port that the polaroid filter will be centered on the light beam.

The upper bar must also be accurately level—for this reason a spirit level is supplied with the Natural Vision conversion "package." The lower bar need

(Continued on page 28)



This graphic presentation of the principle of Natural Vision projection was distributed at the California showings and subsequently circulated by United Paramount circuit to its projectionists and managers.

1952: A Wonder Year for Progress

NO YEAR in the entire history of the motion picture industry has seen such immense and widespread gains in its technology as the one just closed. Some of these, Eidophor, Cinerama, Natural Vision, were stunningly spectacular. Others, such as a mirror that does not reflect heat, or TV beam transmission beyond the horizon, though less glamorous, may develop a quiet but tremendous importance.

Not all of these advances are in actual use. Cinerama and Natural Vision are, but only on a specialty basis thus far. Of the two, Natural Vision, which costs less for equipment and personnel than Cinerama, is spreading more rapidly.

One other highly significant advance is not a 1952 development at all, but merely a report of growth. In that year the number of American theatres equipped for large-scale television increased, for the first time, beyond 100. Also, in 1952, large-screen television was shown in a drive-in theatre for the first time.

The pages of this publication ensroll the record:

Heat-Transmitting Mirror

In February's issue, page 14, will be found Dimmick and Widdop's discussion of the heat-transmitting mirror. Light from the projection arc is striking this lamphouse mirror is reflected to the aperture in the usual way, but *heat* from the arc is not because the mirror does not reflect heat. The heat is transmitted—passes right through the mirror and could then be absorbed by asbestos or by a water-plate—it does not get to the film.

This result is produced by "... the interference effect within films of dielectrics deposited on the glass. The mirror described ... reflects more than 95% of incident light and transmits a large part of the energy beyond 7000 Å (Angstrom units)." Such mirrors have been produced; they are not yet, however, in commercial production.

The value of these mirrors to drive-in theatres is obvious, but they have a further connection with some of the other developments of the year 1952. Cinerama, it may be remembered, needs three projectors and three arc lamps. Although its sponsors conducted some elaborate tests and selected what they considered to be the steadiest-burning lamp on the market (IP for December, page 34), they still could not achieve the impossible and keep three different carbon arcs burning at exactly the identical brightness and color. In consequence, as these columns reported in October (page

Eidophor, Cinerama, Natural Vision, led parade of marvelous advances such as this industry has never known in any one year of its history, while many other less glamorous but intensely practical developments also added to our gains.

By LEROY CHADBOURNE

11): "The projection light on the three panels is often unmatched as to both brightness and color tone. ... The white-faced Scotch bagpiper who marched across the screen from one panel to another instantly became sunburned!"

Members of the craft will not easily believe that Cinerama engineers or anyone else is very likely to get identical light out of three different arcs, but if a heat-transmitting mirror permits the use of one super-arc to illuminate all three Cinerama films then the desired result would be attained.

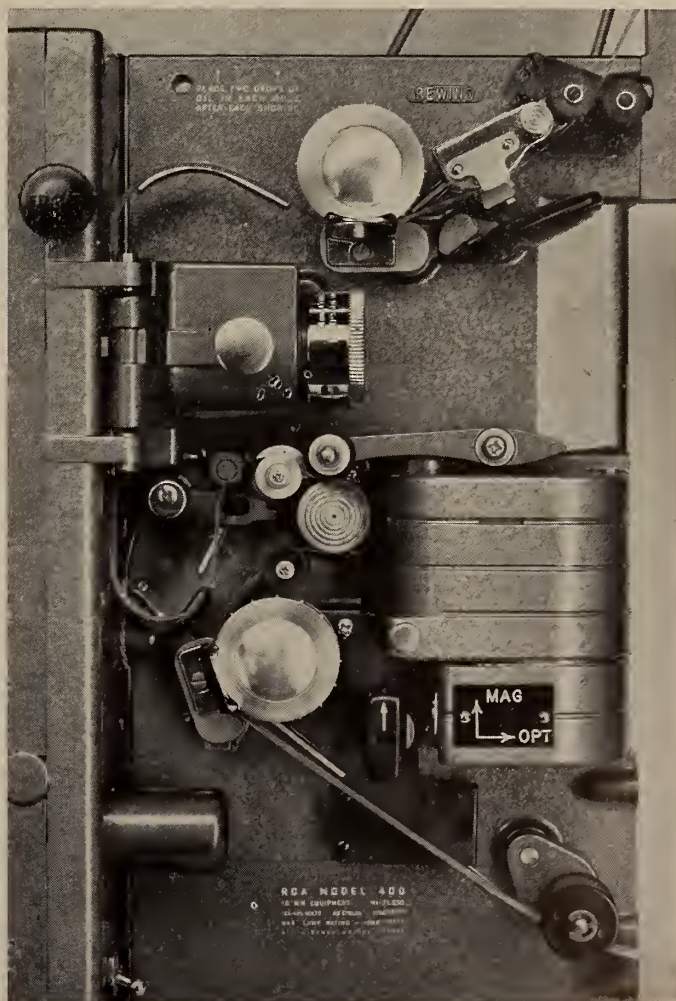
And in the case of Eidophor: the heat of the arc is an important factor in altering the viscosity of the liquid surface on which the TV image is formed (July,

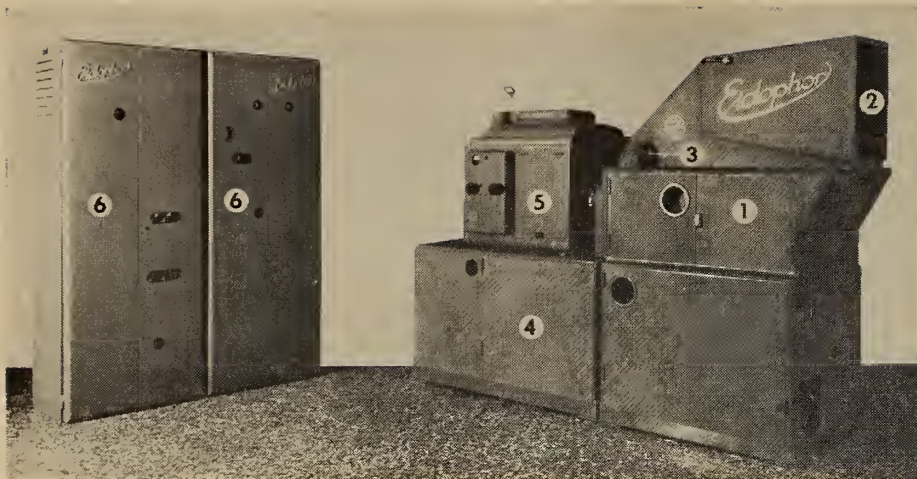
page 14), and in promoting its evaporation. To counteract these two undesirable effects, a refrigerator is built into the equipment to hold down the temperature of the Eidophor liquid, and a vacuum pump added to remove its vapor as fast as it appears. *Cold* light from the arc would assuredly reduce the load on both refrigerator and pump, permitting the use of smaller, lighter, and less costly equipment for those two functions; and might just conceivably—in spite of the fact that the liquid is also heated to some extent by electron beam bombardment—permit entire elimination of either or both of those components.

Magnetic Sound

Possibly portentous for the theatre was the introduction, in 1952, of magnetic

Magnetic soundtracks came into common daily use in 16-mm projection during 1952. This RCA-100 16-mm projector can be set to play either a magnetic track or standard 16-mm optical track; and also to record magnetic sound on suitably "striped" 16-mm prints.





Eidophor theatre color TV projection equipment. Projector proper is the assemblage at right, wherein (5) is the arc lamp; (1) the projector; the projected light-beam, deflected by mirrors, emerges from hood (2); (3) indicates the color wheel housing, and (4) shows the housing for the refrigerator and vacuum pump. Cabinets (6) contain the TV receiver and power circuits.

soundtracks to supplement (conceivably in the end to supplant) optical soundtracks. A number of *magneto-optical* 16-mm projectors were described herein during 1952, beginning with the one pictured on page 23 in the June issue. And in December (page 23) these columns presented an 8-mm magnetic sound projector.

Magnetic tracks, however, are by no means confined to non-theatrical films. Cinerama uses magnetic tracks, and the extreme excellence of its sound is attributable in part to that fact. Regardless of whether or not tracks of such quality could be created by optical methods, they would not keep their quality, for scratches and dirt would mar it, while magnetic records are substantially immune to these impairments.

Magnetic tracks also are, and have

been for years, used in studios throughout many of the phases of recording and editing sound pictures. Translation into an optical record for release to the theatre may be one of the final steps in production. Until 1952, however, magnetic sound had not been commonly used in projection.

Long Distance TV

On page 10 of the June issue is a Bell Laboratories report of the findings of their scientists who had been investigating transmission of TV carrier waves beyond the horizon and discovered it can be done. Their "experiments have indicated that the very high and super-high radio frequencies, such as those used for television, radar, and microwave relay systems (microwave relay systems also are used in TV networks) are not necessarily limited to approximately line

of sight distances, but that signals can consistently be obtained at distances of 200 miles or more beyond the horizon."

The key word in the above statement is *consistently*. So-called "freak" transmission of these frequencies over great distances is far from new. What these investigators reported in 1952 is that the long-known "freaks" can be reduced to reliable performance. They found that while considerable power is needed to punch through the horizon distance, once that has been done the signal strength beyond the horizon decreased very much more slowly than had been expected.

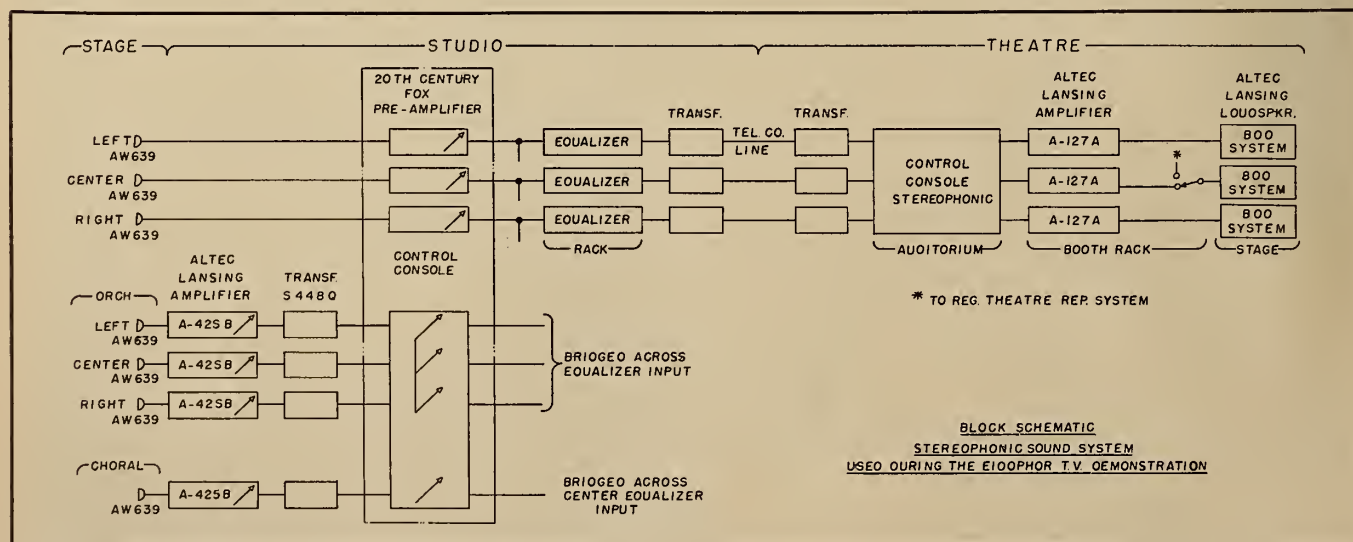
Using frequencies between 459 mc and 3700 mc, the investigators found consistent transmission practicable, and directional antennas effective at distances up to 325 miles, when using powers ranging between 1 and 300 kw. The implications of these discoveries, from the point of view of making TV programs available to remote theatres is self-evident.

Full-Color Large-Screen TV

Eidophor fills a full-size theatre screen with a TV image in natural color, free of visible scanning lines, and brilliant with the intensity of a carbon-arc light source. "The image was of such quality that it was mistaken by some observers for a Technicolor film." (July, page 30.)

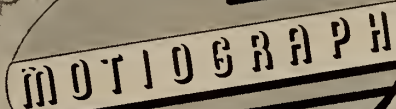
The principle of action differs from that of all other television systems in the way the image is produced. In other systems, including common home-type equipment, the television signal is reproduced in the form of a fluctuating, sweeping beam of electrons which bombards a screen of fluorescent material. This screen produces the picture accordingly.

In Eidophor, a comparable beam bom-



Eidophor's three-dimensional sound arrangements in block schematic. Seven microphones at left provide dimensional coverage of both orchestra and stage, plus non-dimensional coverage of choral group. Outputs are mixed in the control console to constitute three audio

channels, one each for the right pair, the left pair and the central pair of microphones. These are amplified separately, and reproduced through three separate and appropriately located loudspeakers. The resulting binaural and stereoscopic sound adds immensely to realism.



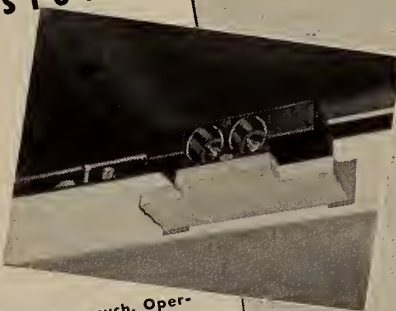
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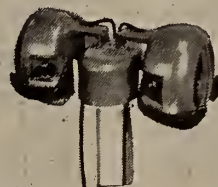
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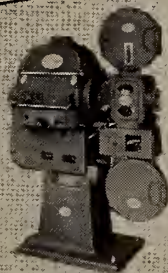


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RCA mobile TV projector that showed the world's first drive-in TV show at the S-3 Drive-In Theatre on route S-3 in New Jersey. Width of the TV image (36 feet) and length of TV throw (125 feet) were also world records—and so perhaps was the gross: \$16,000 for one evening.

bards a film of oily material, which wrinkles and ripples in response. Arc light, shining through this surface, either continues along its previous path or is diffracted by the ripples, and in this way an arc-lit image is produced on the theatre screen. The CBS field-sequential system (each successive half-frame seen in a different color as a color-wheel revolves) completes the presentation.

Eidophor was accompanied by stereophonic sound (September, page 11)—not previously heard in a theatre since Walt Disney presented his *Fantasia* back in 1940. There were three separate sound systems, complete with three sets of speakers spacially distributed in the auditorium, to produce the realism of sound coming from different directions and (sometimes) from a moving source. Cinerama also utilizes stereosound. Natural Vision (for the present, at least) does not.

Cinerama

IP's report on Cinerama was presented in the issue for October, page 14; followed by excerpts from comments of non-technically minded New York theatre critics in December, page 17. From the point of view of craftsmanship, Cinerama can hardly be described otherwise than as a projectionist's nightmare. "Straight lines come out bent; imperfect merging of the frames makes skyscrapers jig and mountains dance; viewing keystone in the side seats is monstrous," reported IP in October.

But—"... they buy out the box-office at advanced prices, applaud thunderously, and tell each other it's wonderful." They also tell all their relatives and friends it's wonderful, with the result that the New York showing is sold out months in advance, and showings in other cities are planned.

Technical improvements are forecast; friends of Cinerama say (December, page 17) that the highly visible vertical unsteadiness of the projected image is due more to camera jump than projector jump, and that new cameras are being built.

Drive-In TV

The October issue of IP, which reported the first public showing of Cinerama, also reported (page 12) the first public showing of TV on a drive-in screen, and the largest TV image ever created. The image was 36 feet wide, and it had the longest TV throw on record—125 feet! Equipment was RCA's; and the gross at the drive-in that night was \$16,000 at \$10 per car. The theatre was the S-3 Drive-In, located on Route S-3 in New Jersey. It was only

one of a number of theatres that displayed the Marciano-Walcott boxing match on September 23, 1952. Total gross for that one evening by the 50 theatres carrying the event, was reported at \$400,000, or an average of \$8,000 per theatre per evening for a television spectacle.

Transistor

The transistor as a subject for laboratory investigation is several years old, but 1952 is the year in which it first went into commercial operation (December, page 35), and in which its wide versatility of commercial possibilities was first demonstrated in actual, usable prototypes of commercial equipment. (To be reported in next month's issue).

The general nature of the transistor and the general theory of its performance were set forth in November, page 12. It is an amplifying, oscillating device capable of replacing the vacuum tube in many applications and without need for a vacuum. In physical appearance and essence it is a mere slug of material to which three wires are attached—input, output, and common. The material is germanium metal but not homogeneous throughout; different portions of it have been differently treated to make the ends electrically positive and the center section electrically negative, or vice versa.

It is very small, very light, compared with a vacuum tube, and needs in the order of only 1/1,000,000th as much operating power to perform the same work. The year 1952 is the one in which this device was first put into routine commercial operation.

December's Babies

December's issue of IP announces no less than three innovations.

One is the Synchro-screen for large

(Continued on page 32)



Panoramic screen used for Cinerama in the Broadway Theatre, New York City. The screen measures 78 feet around the curve, 51 feet straight across the curve from end to end, and has a height of 26 feet. Three projectors, their light-beams crossing, are needed to put the Cinerama show on this screen.



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TELECASTS

Color Television Simplified by New Paramount Tube

EXCITEMENT surged through Paramount Pictures headquarters, N. Y. C., this month, as the Lawrence-Paramount picture tube for ultra-simplified color-TV was demonstrated to company executives, to important visitors (some of them from overseas), and to representatives of financial firms. A New York brokerage house issued a bulletin of strong praise for the new color tube.

The tube is based on an idea originated by Dr. Ernest O. Lawrence, Nobel-prize winning California physicist, from whom Paramount acquired the rights. It represents possibly the simplest of all methods of producing TV images in full color.

At present, since color TV entertainment is not being broadcast, the tube is being used in industrial full-color video; but Paramount is also looking forward to its use in full-color, large-screen direct projection theatre television.

Tube Design

Structurally and electrically the new color tube is very similar to conventional black-and-white picture tubes. The only significant differences are those diagrammed in Figure 1, which shows a section of the phosphor screen, and a special grid of wires located in the path of the electron beam.

In an ordinary black-and-white picture tube a beam of electrons scans a fluorescent surface, which emits white light in proportion to the strength of the bombardment at each point. As the beam sweeps across the surface, flies back "dark," and sweeps another line a little lower down, the entire surface of the fluorescent material is scanned in 1/30th second. Since each point on that surface glows white at an intensity proportionate to the fluctuating power of the electron beam, a black-and-white image is created.

In interlaced scanning, as commonly used, each frame is created by a double-scanning; first lines 1, 3, 5, etc., to the bottom of the screen; then the beam flies back "dark" to the top and repeats the process, lacing in lines 2, 4, 6, etc. Each half-scan, consisting of either all the even lines, or all the odd lines, is called a "field." In conventional TV there are 30 frames, and, therefore, 60 fields, per second.

In the new Paramount tube the fluorescent surface is composed of three phosphors, one each for red, blue, and green. That is, these phosphors are different materials, which glow in different colors under electronic bombardment. Figure 1 identifies the red and the blue strips; the alternate strips between red and blue are the green. This three-color phosphor surface is one of the two significant ways in which the Paramount tube differs from ordinary black-and-white tubes.

The second difference is also shown in Figure 1. It consists in a grid of wires positioned in the path of the beam, behind the fluorescent surface. There is one

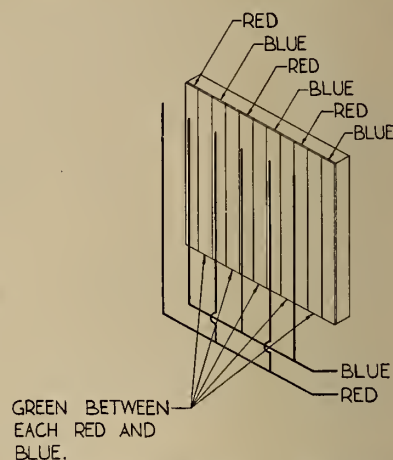


FIG. 1. Special features of the new Paramount picture tube for electronic color TV are diagrammed here. In a conventional picture tube the fluorescent surface, on which the image appears, is coated throughout with a single fluorescent composition; the same surface of the Paramount tube is coated with alternate strips of three different materials, which glow in three different colors. Behind each red and blue strip (but not behind green ones) is a grid wire not found in conventional tubes.

wire behind each red strip; and another behind each blue strip. There is no grid wire behind any of the green strips of the phosphor.

All the "red" wires are electrically connected together in parallel, forming a "red" grid; and similarly the "blue" wires are electrically paralleled to form a "blue" grid. "Red" and "blue" grids are not connected to each other; to the contrary, a potential difference of about 15,000 volts is applied between them.

Principle of Operation

The television camera utilizes a color wheel. Alternate fields are taken through red, blue, and green gelatine filters. Operation at the receiving end is completely electronic, and may be either in full color or black-and-white, according to the nature of the received signal.

If the transmission is in color, through a TV camera equipped as above, the signal is accompanied by color information which alters the state of charge of the "red" and "blue" grid wires. As this charge varies the electron beam is deflected one way to activate the "red"

(Continued on page 31)

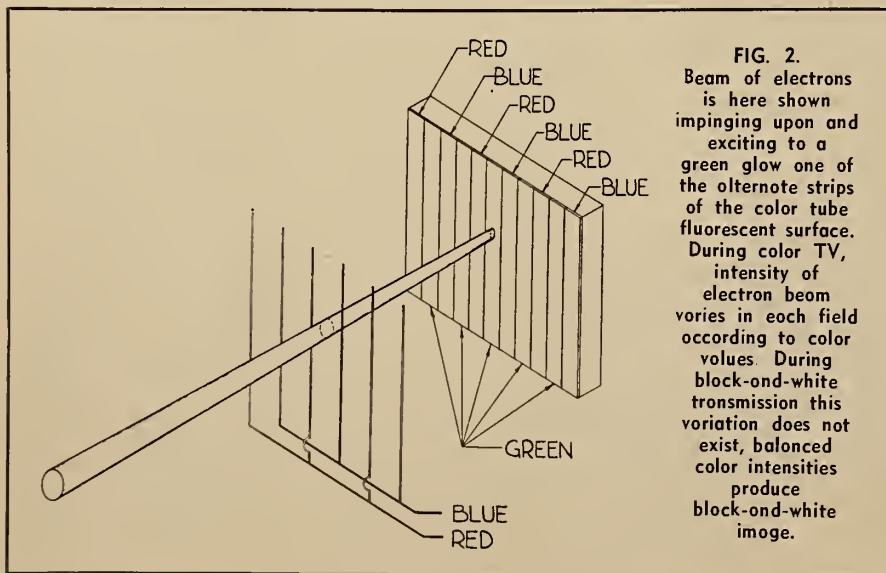


FIG. 2. Beam of electrons is here shown impinging upon and exciting to a green glow one of the alternate strips of the color tube fluorescent surface. During color TV, intensity of electron beam varies in each field according to color values. During black-and-white transmission this variation does not exist, balanced color intensities produce black-and-white image.

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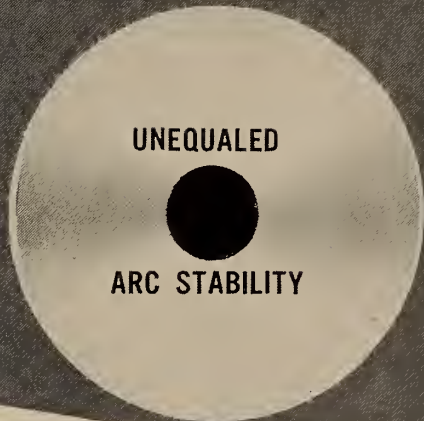
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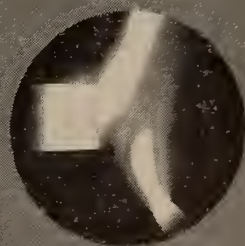
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Types of Theatre Sound Reproducers

This is the first of a series of articles analyzing the essential nature of devices that convert sound records into electrical currents.

Two general types of these devices, the disk reproducer and the soundhead, are used in theatres at present, while the magnetic reproducer is growing increasingly popular for 16-mm projection.

By ROBERT A. MITCHELL

I. The Sound-on-Disk Reproducer

THE term "sound reproducer" includes a wide variety of apparatus for transferring or re-creating auditory stimuli. A public-address system to which a microphone is connected, for example, constitutes a sound-reproducing system. In general, however, we think of apparatus in which *sound records* are played as reproducers, and consider these apart from the electrical amplifiers and speaker systems through which they work. Thus we have reproducers for the several types of phonograph records, for photographic soundtracks on motion picture film, for steel-wire and magnetic-tape recordings, etc.

The theatre projectionist is ordinarily concerned only with two special types of sound reproducer, namely, sound-on-disk and sound-on-film. Although *synchronized* sound-on-disk has not been used in motion-picture projection these many years, heaven be praised, *non-synchronous* disk reproduction is an important item in well-run theatres for providing the necessary music before the shows and during intermissions.

The terms "synchronous" and "non-synchronous" applied to disk reproduction refer, of course, to whether the phonograph record runs in exact step with the film. In the early days of sound pictures, large disk records, played on a turntable attached to the projector, furnished the sound. Projectionists who operated in the days of "Vitaphone" recall sound-on-disk with horror. When repairing prints it was absolutely necessary to replace every discarded inch of film with an equal length of black film in order to keep the picture and sound "in synch."

It was also necessary to thread up with a "start" frame in the aperture and with the phonograph needle resting on that point of the first record groove marked by an arrow. But even with every precaution taken, it sometimes happened that the record got very badly "out of synch." The writer remembers one case where an actor kept on talking after he had been killed, pronounced dead, and buried.

Magnetic-tape reproduction is widely

used in 16-mm projection, partly as a substitute for, and partly in conjunction with, regular photographic soundtracks. At the present time magnetic tracks are used in the 35-mm field only for recording purposes, although their high fidelity and low noise-level may recommend them for theatre use when stereophonic (multi-directional) sound, which involves the simultaneous playing of three or more soundtracks, becomes standardized. (*Cinema uses magnetic-track sound.*—Ed. Note.)

Quality of the Sound

"High fidelity" is a term descriptive of the qualitative efficiency of any sound recorder, reproducer, or record. Distortion is the enemy of high fidelity. When sound invaded the motion-picture industry in 1928, killing the art of the "silent drama" by giving birth to a strange new audio-visual art compounded of basic movie techniques and the talkative art of the stage, sound distortion was a severe handicap.

The early "talking pictures" hissed and snapped during intervals of intended silence because "noiseless" recording was not then in use. Music sounded thin, fluttery, and unnaturally "tinny" because of imperfections in the recording and reproducing apparatus. Speech was often

garbled and difficult to understand because of distortion.

Modern movie sound is nearly free from objectionable distortion when reproduced from the best sound-on-film records on the best equipment under the best conditions. In fact, all distortion having its origin in amplifying units (with the sole exception of a troublesome kind of distortion called "inter-modulation") is kept under 2 per cent of the total power output in present-day equipment of good manufacture. Improperly installed speaker units and poorly adjusted soundhead components, however, may cause distortion even when new and mechanically and electrically in good condition.

The sound equipment in most theatres, unfortunately, is far from being new or free from wear and maladjustment. And all too often exhibitors practise the false economy of "modernizing" outmoded sound systems. Obsolete sound systems cannot be built over to equal the excellent performance characterizing all of the more modern ones.

It should be clear to everyone in the exhibition business that the reproducers, amplifiers, and speakers that represent earlier efforts in the sound-picture field cannot perform in a satisfactory manner no matter how they are "pepped up" by adding a few new units. The defects of obsolete soundheads, for example, are often made more evident by improving the frequency range of the speaker units. And electrical distortion produced by old-style amplifiers may be magnified in the same proportion as the signal when additional power stages are used.

As every projectionist knows, mechanical factors can cause sound distortion as readily as do such electrical factors as faulty vacuum tubes, amplifier overload, etc. In fact, sound engineers are deeply concerned with the mechanical limitations of recording and reproduction.

In the case of sound-on-disk, the physical wiggling of a cutting stylus pro-

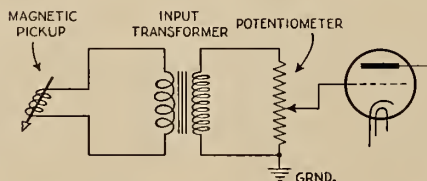


FIG. 1. Circuit diagram showing connection of magnetic phono reproducer to amplifier. Function of the input transformer is to match the impedance of the reproducer to that of the amplifier circuit. Action of the magnetic pickup is commonly based on vibratory changes in the magnetic flux path produced by vibration of the needle as it follows the groove of the record. Vibratory changes in flux strength induce a corresponding voltage in the pickup coil. Impedance match between pickup coil and transformer input coil assures maximum transfer of energy from pickup to transformer.

duces a wavy groove in the master disk which, in turn, is used in purely mechanical processes for stamping the commercial records.

Mechanical factors that can introduce distortion are unavoidably present in the sound reproduction process. Both the phonograph record and the soundfilm print must be moved at a constant speed the same as that used in recording; and the slightest deviation from standard constant speed will prove ruinous to the quality of the sound. These considerations demand the most careful construction of all parts of any sound reproducing apparatus.

Features of Disk Recordings

The phonograph reproducer, though much simpler and less expensive than a film soundhead, necessarily involves a moving component—the vibrating stylus and electrical generating unit of the pickup—which has no counterpart in either sound-on-film or magnetic-tape reproducers. This is one of several reasons why film and tape recordings are capable of giving a more faithful facsimile of the original sound than any type of phonograph record. Another reason is that film and tape recordings can be made practically noiseless, whereas the stylus, or needle, of a phonograph pickup is necessarily subjected to the mechanical friction of the moving record-groove at all times.

Even though disk records are now made of smoother materials than formerly, materials having a lower surface-noise level, they still "hiss" noticeably during moments of intended silence when a fairly wide frequency band (50 to 8,000 cycles per second) is amplified and reproduced by the speakers. Record hiss can be reduced by eliminating all sound above 3,000 or 4,000 cps, but this expedient results in muffled, "boomy" sound which imparts to voices a thunderous, drum-like quality.

An additional reason why sound-on-disk is inferior to sound-on-film and magnetic tape is the undesirable compliance of lightweight pickups. When high-frequency sounds are being reproduced, the pickup works very well because only the needle is caused to vibrate by the wavy groove. But when sounds of very low frequency are present in the record, not only the needle, but the entire pickup, wiggles. This distorts the wave-form of the sound, giving it an unnatural quality; and when high and low frequencies are being reproduced simultaneously, a serious type of distortion known as "intermodulation" is mechanically produced. When we hear it we think that we need a new needle or a new tube in the amplifier, when actually, unwanted vibration of the whole pickup is responsible for making the sound blurry and raspy.

For perfect sound reproduction we

should require a system having a "flat" response throughout the entire frequency-range detectable by the human hearing apparatus, to wit, from about 15 to 30,000 cps. This is a bit beyond the capacity of even a good sound-on-film reproducer, for photocell response, when a 0.00125-inch scanning slit is used, cuts off to nothing at 14,400 cps.

Moreover, amplifier and speaker design, being what they are, cut off in the 8,000 to 10,000 cps. range. This is no great handicap for the reproduction of most sounds, but it makes impossible satisfactory reproduction of the tinkling of shattering glass, the hard brilliance of the triangle in orchestral music, the crunch of gravel trod upon, the rustle of dried leaves, the crystalline clank of metal, the soprano scream of rushing wind, and a thousand and one other subtle "transient" sounds heard in real life by all whose hearing is in good order.

Sound-on-disk is no better off in this respect. Even though 10,000 cps can be recorded on both 78 rpm and 33 1/3 rpm disks, the ability of a slightly worn needle to follow faithfully the microscopic waverings of the record groove is very poor indeed. Poorer still is the ability of the record itself to preserve its tiny 10,000-cycle waves from the erasing action of the needle, which scuffs them rather roughly.

Nature of the Problem

Earthquakes, thunderstorms, explosions, rumbling trains, and many other common sources of sound produce vibrations lower than theatre sound systems can handle. Large pipe organs have a pipe that gives a 16-cycle tone when played. This is almost below the range of normal audibility; but the tone is so powerful that it can be felt as something vibrant in the air, something that comes up through the floor and gives one a good shaking from head to foot. This is a sound effect that could not be du-

plicated in sound reproduction even if the speakers had tremendous capacity. Output power of the order of several hundred watts would be required to simulate it even mildly.

Every projectionist should familiarize himself with the sounds which occur in the bass, tenor, alto, and soprano frequency bands. The very lowest sounds, of course, belong to the bass region. Using the piano as a demonstration apparatus, the bass extends from the lowest note (an "A" vibrating 26.667 times per second) to the "E" which is 12 white keys below "Middle C." This "E" has a fundamental frequency of 80 cps.

Tenor extends from the aforementioned "E" to "C" an octave above "Middle C." Alto takes in the next octave or so; and all the rest of the keys, up to the end of the keyboard (a "C" vibrating 4,096 times a second) may be considered as soprano. These are not musical definitions of bass, tenor, etc.—they are arbitrary definitions which help us locate various sounds on the piano keyboard as a kind of "reference."

It can be appreciated that our sound reproduction systems, especially sound-on-disk, fail at both ends of this piano "sound spectrum." In fact, the highest tones that our theatre sound-systems are capable of reproducing clearly (about 8,000 cps) are only one octave above the highest note on the piano keyboard.

But a piano sounds only like a piano, and not like the neighbor's boy practising on his cornet. Neither does the lowest "A" on the piano have the deep, penetrating quality of the same "A" in the closed diapason register of the organ, even though both vibrate 26.667 times each second.

In what lies the difference? When we strike the lowest note on the piano keyboard we actually hear only a pattern of several higher sounds *repeating themselves* 26.667 times every second. The true *fundamental tone* of this frequency is rather weak on the piano; though it is stronger in a big concert grand than it is in Aunt Emma's second-hand upright. If we sound the same "A" on the organ, using a single stop marked "closed diapason," "flute celestes," or some other kind of flute, we hear only the fundamental tone of 26.667 cps, for closed pipes produce very few harmonics with the fundamental.

Pure Tones and Harmonics

All this, which seems very academic, can help us judge the capabilities of sound reproducers. We have all heard piano music on both disk and film; we are certain that we have many times heard some very low notes sounded; and we are of the opinion that they sounded very realistic indeed.

Well, then, let us assume that in one

(Continued on page 33)

Movies High Hat Now

Grand Opera toured the country via the projection room on December 11 when *Carmen*, played on the stage of the Metropolitan Opera House in New York City, was televised to 31 theatres from coast-to-coast and exhibited via large-screen TV. Admissions ranged up to \$7.20 a seat. The Gopher Theatre in Minneapolis ran out a red carpet on the front sidewalk and uniformed its ushers in tuxedos. The Telenews Theatre in San Francisco served free cocktails during the intermissions. Out-of-town "opera-goers" had a more intimate contact with the entertainment than did patrons at the Metropolitan itself, since no seat in the great house yields a close-up view that can be compared to the TV camera's.

IN THE SPOTLIGHT

ONE of the practical, paying advantages of high competence in craftsmanship was exemplified for us in the case of Ed Priban and Henry Feigenbaum of Local 110, Chicago, who were most welcome visitors to IP's offices this year-end. Priban and Feigenbaum were assigned by their Local, some time back, to stereo-project three-dimensional stills for International Harvester Company, in connection with an advertising and sales campaign. So pleased was the International Harvester management with the work of these men that when the company decided to take its stereo show to New York this year-end, Messrs. Priban and Feigenbaum were re-engaged and enjoyed an all-expense-paid trip to New York, plus, of course, union wages. All because they had given an employer reason to feel confidence in their skill.

- A recent issue of *Labor News*, a weekly published by the Rochester, (N.Y.) Central Trades & Labor Council, AFL, carried an interesting article describing the trials and tribulations of Rochester Local 253 in the early days of its existence. According to this report, the first meetings of the small group of projectionists who were determined to affiliate with the IA were held in secret, for at that time, back in 1912, labor unions were held more or less in disfavor and very often men suspected of union sympathies found themselves among the unemployed.

Local 253 received its charter on July 15, 1912, and Roy J. Fisher was elected its first president. Fisher, incidentally is one of the few remaining charter members of the Local and is head of the Fisher Mfg. Company, manufacturers of the well-known Ethylloid film cement. Three of the remaining charter members still hold office in the Local: Leon E. Burton, who has served as treasurer for the past 34 years; Floyd B. Spencer, secretary for 25 years, and Fred E. Bockhout, business representative for the past 17 years.

Due to the persistent efforts of Local 253, the state licensing law was made effective in Rochester, and today two members of the Local serve on the City Examining Board. As told to a *Labor News* reporter, Floyd Spencer stated, "Many changes have been made in projection since the days of the nickelodeon with one hand-operated machine. Sound

pictures, with their complicated amplification equipment were mastered by our members. Now television and other great changes are in the offing . . . our men are preparing to meet these advances in projection with the same courage and success as in the past."

- Cinerama is on the "must" list for many out-of-town IA men visiting New York. Jim Sipe, Luther Thompson, and Harold O'Donnell, members of Pittsburgh Local 171, made the trip recently to get a first-hand report on the process.

- We were glad to learn that William H. Hartnett, business representative for Local 257, Ottawa, Ont., Canada, is recuperating successfully following recent surgery.

- St. Louis has been chosen as the site of the 1953 AFL convention. The date is September 21, and the meetings will be held at the Hotel Jefferson.

- A record turnout marked the recent 40th anniversary celebration of Local 488, Harrisburg, Penna. Public and labor officials from all over the nation were present at the affair, which was considered to be one of the most outstanding

labor events of the year. City Councilman Harry O. Dayhoff, pinch-hitting for Mayor Claude Robins, who was indisposed, welcomed the guests. IA President Walsh and General Secretary-Treasurer William P. Raoul were among the speakers of the evening.

Among the many labor notables present were Alan Kline, president of the Central Labor Union; James L. McDevitt and Earl C. Bohr, president and secretary-treasurer, respectively, of the Penna. Federation of Labor, and Michael Johnson, district manager of the ILGWU Local 108.

Serving on the banquet committee were Sam Rubin, Richard Bennett, Paul Pateron, Charles J. Jones, John Bruner, Clarence Rudy, and Lawrence J. Katz.

- W. Martin Lipscomb, business representative of Local 400, Alexandria, La., was elected vice-president of the new chapter of the United Cerebral Palsy Association recently organized in Louisiana. This chapter, the second in the state, is located in Alexandria and the members of Local 400 have pledged themselves to cooperate to the fullest in the good work being done by that worthy organization.

- John Stanton, projectionist at the Louisa Theatre, Carnegie, Penna., was credited by Carnegie Fire Chief M. F. Schulte with averting a panic during a quick-spreading fire which destroyed the building occupied by the theatre. About 200 patrons, most of whom were children, were attending a matinee when Stanton discovered smoke curling from the ceiling. He immediately stopped his projection machine, turned on the lights and calmly assured the audience that although

HARRISBURG, PENNA. LOCAL 488 CELEBRATES ITS FORTIETH ANNIVERSARY



Shown here are members and guests attending Local 488's 40th anniversary celebration held on December 12 in the ballroom of the Penn-Harris Hotel in Harrisburg. Present at the banquet were top ranking IA officials and many prominent public figures. Six of the original charter members of the Local—Lawrence J. Katz, Sam Rubin, Harry N. Michaels, Harry Smith, Frank Creme, and Elmer Z. Yost—were on hand to receive special honors. IA President Walsh made the presentations on behalf of the Local, and lauded the men for their splendid efforts down through the years.

there was no immediate cause for alarm, suggested that they walk out quickly and quietly. The fire completely destroyed the building, causing an estimated damage of more than \$150,000. It was only the cool-headedness and quick thinking of the projectionist that prevented what might have been a disaster.

- A joint announcement by Roy Brewer, IA representative, and Charles Boren, in charge of industrial relations for the Ass'n of Motion Picture Producers, revealed that both major and independent producers recently agreed to a health and welfare plan covering all IA West Coast Studio Locals. Among the benefits included in this plan are: group life insurance, accidental death and dismemberment, surgical, medical, and hospitalization payments.

- Damage estimated to be several thousands of dollars was caused by a fire that broke out in the projection room of the Grand Theatre in Denver, Colo. Film in one of the projectors ignited and the flames quickly spread to the second projector before they could be brought under control.

- A threatened strike was averted when Akron Local 364 and the exhibitors signed new three-year wage pacts.

- Cooperation between theatre owners and IA Local 101, Sharon, Penna., in opposing a proposed 10% amusement levy in the township of Hickory and in other nearby communities, resulted in the withdrawal of the measure by the township supervisors. Local 101 ran a special advertisement in the Sharon *Herald* informing the readers of the proposed tax and urged that they attend a scheduled meeting of the supervisors in protest against what the Local termed an "excessive and discriminatory tax." So much interest was stirred up and so vigorous was the opposition to the proposed levy that the whole idea was junked and now the powers-that-be must look around for other means of added revenue.

Local 101 officials, Laurence I. Boyd, secretary, and J. M. Burke, business representative, are to be commended for their untiring efforts in helping to defeat the proposal.

- The next New York State Union Label Trades convention will be held in Binghamton, N. Y., early in May.

- The recent purchase of an additional \$100,000 worth of the U.S. Defense Bonds by Chicago Local 110 increased the Local's total U. S. bond investment to \$376,000. Eugene Atkinson, business manager, declared that this purchase was

IA ELECTIONS

LOCAL 150, LOS ANGELES, CALIF.

John Maynard, *pres.*; E. L. Robbins, *vice-pres.*; Charles Vencill, *sec.-treas.*; George Schaffer, *bus. rep.*; Paul Mahoney, *ass't bus. rep.*

LOCAL 173, TORONTO, CANADA

James Sturgess, *pres.*; Arthur Kerrin, *vice-pres.*; George H. Jones, *sec.-treas.*; R. C. Higgins, *rec.-sec.*; Arthur Milligan, *bus. rep.*; Norman Tanner, Jack Hills, Roy O'Connor, L. Applebaum, *exec. board*; T. Covert, J. Harris, Jr.; L. Clarke, *board of trustees*; Solly Cohen, *sgt.-at-arms*; George Robinson, *tyler*.

LOCAL 181, BALTIMORE, MD.

Louis P. Sieber, *pres.*; Wilbur C. George, *1st vice-pres.*; Hal Braswell, *2nd vice-pres.*; Edward T. Eich, *3rd vice-pres.*; Chester L. Towers, *rec.-sec.*; Thomas P. Finn, Sr., *fin.-sec.*; Carroll G. Bayne, *bus. rep.*; Charles J. Grauling, William R. Lange, Jr., Arthur N. Eich, *trustees*; Charles Spellman, Ned Isbeck, *wage scale comm.*; Elmer Kastner, *sgt.-at-arms*.

LOCAL 222, SHREVEPORT, LA.

H. Eaton, *pres.*; Cecil Parker, Sr., *vice-pres.*; Frank Gwin, *sec.-treas.*; N. S. Laird, *bus. rep.*; Earl Laird, *sgt.-at-arms*.

LOCAL 307, PHILADELPHIA, PENNA.

Harry J. Abbott, *pres.*; Abbott Oliver, *vice-pres.*; Alexander Fell, *rec.-sec.*; Charles Humphries, *fin.-sec.*; Horace Johns, *bus. rep.*; Ben Green, Parker Kennedy, Al Van Bell, Robert Block, *exec. board*; Abe Sherman, Al Werlin, William Braunewell, *trustees*, Albert Winkler, *sgt.-at-arms*.

an expression of the Local's appreciation of President-elect Eisenhower's appointment of Martin Durkin as U. S. secretary of Labor, and of the recent election of George Meany as president of the AFL, succeeding the late William Green.

"We have no better way to express our appreciation to the President-elect," said Atkinson. "His act in choosing Durkin was done with understanding and courage, and was completely divorced from partisan politics. . . . George Meany was also a happy choice as AFL chief. He will be a great contributing factor in the cementing of good labor-management relations."

- Thirteen IA Locals now have membership in the newly organized Eastern Motion Picture Council, a counterpart of the Hollywood AFL Film Council. Eastern Council covers the Greater New York area and has been expanded to take in Local 650, Westchester County; 640, Nassau and Suffolk Counties, and 642, Bergen County (N. J.).

- According to reports in the trade press, many IA Locals throughout the country are giving considerable thought to the

expanded use of large-screen TV and to the possible benefits that projectionists may derive from the increased admission prices to these telecasts.

Many Locals contend that when the box-office price is increased to equal that of the point of origin of the telecast, then projectionists are entitled to a hike in pay. A case in point is the recent large-screen nation-wide Metropolitan Opera House telecast of "Carmen," when the top admission price asked by the Theatre Guild in New York was \$7.20. It is very probable that future contracts between IA Locals and theatre telecasters will include provisions covering such events.

- A barbeque and dance marked the recent 41st anniversary celebration of Local 222, Shreveport, La.

- Carl Lasker, member of Chicago Local 110, is a patient at the U. S. Veterans Administration Hospital, Madison, Wisconsin, where he is undergoing extensive treatments. He expects to be confined there for quite a spell and would appreciate hearing from brother members in the IA. He may be addressed in care of the hospital.

How to Swindle a Bank

How to swindle your bank and get away with it is explained in detail by so reputable and honorable an authority as Eastman Kodak Company. One reason Eastman reveals the secret is because it won't work any more.

But it did work fine. Man wrote a check to cash for \$1,500, handed it in to the teller. When the cancelled check came back to him with his balance statement he tore it up, complained his balance was \$1,500 short. The bank had no valid proof that a check of that amount had ever existed, and was forced to "make good."

Mr. George L. McCarthy, who retired on January 1st from the presidency of Recordak Corporation to become chairman of its board, is the reason the trick won't work any more, Eastman Kodak reveals. The \$1,500 check referred to was one of many such swindles "put over" on him while he was a vice-president of Empire Trust Company in New York. It got to be a wide-spread racket in the 1920's.

McCarthy invented the idea of micro-filming every check before returning it to the writer. With limited personal funds he built ten microfilm machines and displayed them at a convention of the American Bankers Association. Eastman Kodak became interested and organized Recordak Corporation as a subsidiary under McCarthy's guidance. And at the present time, when Mr. McCarthy changes position from president to board chairman, Eastman reveals the story.

Measuring Sound Absorption*

By EARLE JONES, SEYMOUR EDELMAN and ALBERT LONDON

A method has been developed for measuring sound absorption of acoustic materials that have been installed. It is useful for determining the effects of aging, staining and re-decoration. It is also useful for acceptance testing, since large variations in sound absorption are ascribed to faulty application. Measurements are made without defacing surfaces; the test is non-destructive.

LABORATORY samples of acoustic plasters usually yield repeatable results even when tested by different laboratories. However, when the materials are installed the sound absorption coefficients depend to a large degree on such factors as the care devoted to the mixing of the ingredients, the skill of the plasterer, and the conditions under which the plaster is cured. (Acoustic tiles also, even though from the same group, may vary materially in individual sound absorption coefficients.)

The problem of maintenance of acoustic material installations is of great economic importance. When this material becomes soiled or otherwise unsightly with the passage of time, the choice of a poor method to restore its appearance may result in the loss of its sound absorption. In experimenting with various methods of re-decoration, it is advantageous to make sound absorption field measurements of a small portion of the material before and after using a particular method of re-decoration.

Test Equipment

The "long-tube method" described in this paper makes it possible to measure the sound absorption coefficient of acoustic materials that have been installed without defacing them. It consists of setting up a standing wave pattern within a tube, one end of which is closed

by the acoustic material being tested; and, from measurements of the maximum and minimum pressures in the standing wave pattern, computing that random incidence absorption coefficient corresponding to the value which would be determined by a reverberation-room test. Table 1 was prepared giving the reverberant sound-absorption coefficients for values usually found in testing acoustic materials.

In designing the test tube, 512 cycles per second was chosen as the operating frequency because it is the one used in reverberation testing and is near the

a brass plate covering the back of the tube.

Inside the tube two parallel bars run along its length and are bridged by a center bar to form an H-shaped unit. The center bar of the H can be moved along the length of the tube by means of a steel pipe and a steel rod which pass through a close-fitting bearing in the back cover of the tube. The pipe is for coarse adjustment of the position of the center bar of the H; and the rod, which is threaded inside the pipe, for fine or micrometer positioning.

A microphone is mounted on the H cross member. Several types of microphones were tried. The most successful was a hearing-aid-type crystal microphone. After much experimentation it was found that a caulking-compound gasket would temporarily bond the tube to the material being tested without damaging the material and without too much leakage of sound.

Operation of the Equipment

Figure 1 is a block diagram of the set-up. The signal from an oscillator

TABLE 1.
Absorption coefficients for all values of delta db between 0 and 59.

db	0	1	2	3	4	5	6	7	8	9
0	0.77	0.80	0.82	0.84	0.85	0.86	0.86	0.86	0.86	0.85
10	.84	.83	.81	.79	.77	.74	.71	.69	.66	.63
20	.60	.56	.53	.50	.48	.45	.42	.39	.37	.34
30	.32	.30	.27	.25	.24	.22	.20	.19	.17	.16
40	.14	.13	.12	.11	.10	.09	.09	.08	.07	.07
50	.06	.05	.05	.05	.04	.04	.03	.03	.03	.03

mean of the frequencies used in absorption testing. It was decided that the tube should be made of 1/8-inch brass tubing, 9 3/4 inches in diameter and about 30 inches long. The sound source is a 6-inch permanent magnet speaker mounted on

drives the loudspeaker. The resulting microphone signal is amplified, filtered to remove the effects of extraneous sound and harmonics, and read on a sensitive vacuum-tube voltmeter having an accurate decibel scale.

The field procedure used in determining the sound-absorption coefficient by means of the long-tube method is made clear in the following description of a test made on a ceiling. When mounted on its casters, the top of the tube in the vertical position can be adjusted to any height between 5-feet 2-inches to 5-feet 10-inches. The tube is mounted on a scaffold and its jackscrow run up until its top just touches the ceiling, care being taken to see that the end of the tube touches the ceiling evenly. The caulking-compound gasket is then slipped up and pressed against the ceiling to make a firm seal.

The oscillator is tuned to 512 cps by comparison with a tuning fork. The mi-

(Continued on page 30)

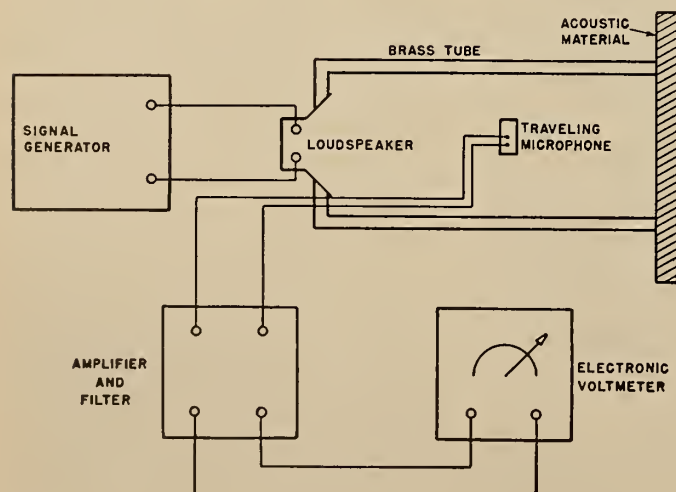


FIGURE 1.
Block diagram of tube and associated equipment as used in field measurements of sound absorption.

16 - m m

BECAUSE EXPANSION OF 16-mm ACTIVITY PROVIDES INCREASING FIELDS OF EMPLOYMENT FOR SKILLED PROFESSIONAL PROJECTIONISTS IN TV STUDIO AND NON-THEATRICAL SHOWINGS, AS WELL AS ENHANCED POSSIBILITIES OF PERSONAL BUSINESS VENTURES. THIS 16-mm DEPARTMENT OF IP WILL APPEAR MONTHLY.

Ampro Corporation's Model 477 Magneto-Optical Projector

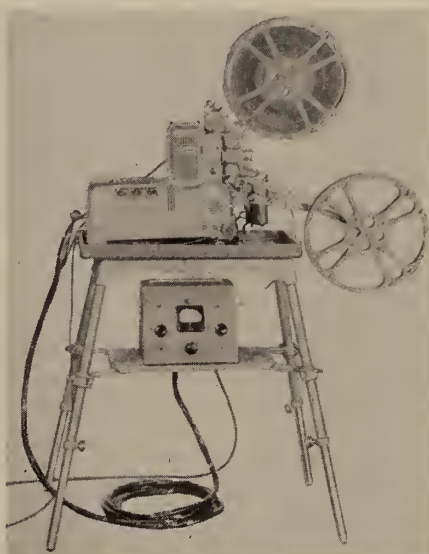
Sound from magnetic and optical tracks can be reproduced simultaneously, mixed in any proportions of volume desired, on this equipment, which also performs all the functions of 16-mm projector, recorder and p.a. system.

AMPRO Corporation's latest 16-mm projector, the Model 477 pictured here, combines all the functions of 16-mm sound projector, using incandescent illumination, with those of magnetic recorder and public address system. It includes a number of special features, one of which is the ability to reproduce simultaneously mixed sound from both optical and magnetic soundtracks.

Others include mechanical provisions along the film path that minimize possibility of any damage to film in case the celluloid slips out of proper engagement with sprocket teeth. Flexibility of gate, pad and shoe arrangements is such that as a rule film will not be destroyed, nor will the show necessarily be interrupted. To the contrary, it is often possible in such cases to restore the film to proper threading without even stopping the motor.

Provisions have also been included for single-frame projection so that in presenting industrial or educational material the mechanism can be stopped for examination of details.

Model 477 normally operates from a 105-125 volt AC line, 50-60 cycles, 11½ amperes. It can, however, operate as a silent projector from a DC line; and in addition it can reproduce optical sound when powered by a DC line if a 100-watt DC to AC converter is added. Projection



Ampro Model 477 16-mm magneto-optical projector is equipped with controls for magnetic recording, and with facilities for mixing half-track optical and magnetic sound in reproduction.

lamps used may be either 750 or 1000 watt and either 10 hour or 25 hour types. Exciter lamps are 4 volt ¾ ampere rating.

For magnetic recording, the equipment is fitted with both volume meter and headset to permit the user to monitor sound being recorded.

The instruction manual goes into very complete detail in matters of operation and maintenance both as a projector and as a recorder.

In projection, the manual indicates, with elaborately lettered or numbered illustrations, how to thread and project film. Routine maintenance instructions—for example, on how to replace an exciter lamp, or how to replace amplifier tubes—are included. In addition, the manual embodies definite information for

curing simple troubles. The following is a typical example of trouble symptom and remedy as presented therein: "No sound, ERASE ON lamp will not light—Magnetic sound amplifier fuse has burned out—replace it."

Instructions for use of the equipment as a recording device go much further—far beyond operating details in production techniques. Users are shown, for example, how to prepare a sound cue sheet for timing music and narration to the pictorial matter on the film; or, how to mix magnetic narration with optical music that may already be present for maximum clarity and best dramatic impact.

16-mm Catalogs and Films

University Extension, University of California, announces a new 16-mm, 20-minute sound film titled: SHAKESPEARE'S THEATRE: THE GLOBE PLAYHOUSE; a scholarly reconstruction of the theatre as it is believed to have existed, and of its conventions of stagecraft. A short sequence from J. Arthur Rank's HENRY V has been included. Much of the action, however, is demonstrated by magnetically-animated scale models in a three-dimensional scale reproduction of the theatre.

The Society of Motion Picture and Television Engineers offers a free catalog of 16-mm and 35-mm test films carrying both picture and sound, or only picture or only sound, according to the nature of the test covered. There are 24 such films at present, varying in length from 8-foot loops to 500-foot reels and sold at proportionately varying prices. All are on safety stock.

Progress of modern science from 1851 to 1951 is demonstrated in British Information Services film titled FORWARD A CENTURY. It bridges the period between the opening of the Crystal Palace by Queen Victoria, and the opening of the Festival of Britain by King George VI. Film is 16-mm sound, black-and-white, running 30 minutes, and available either for sale or for rent.

Illinois Central Railroad maintains a library of 16-mm sound films that are offered on a free loan basis and shipped prepaid, costing the borrower nothing except the postage for returning them. These films deal with railroads, courtesy, safety and related topics. Included is a 45-minute historical feature on Kodachrome with RCA optical sound, titled THE SONG OF MID-AMERICA, which reviews the building up of the Mid-West and the part played therein by I.C.R.R.



One of the conveniently located groups of controls of the Ampro Model 477 magneto-optical 16-mm projector and recorder.

Local Sources of 16-mm Films

[Continued]

PROJECTIONISTS interested in booking 16-mm films either for their Local Union, or on behalf of any other local group they may be serving or on their own accord, will find in this serialized directory the sources available in their own vicinity.

The data given is reproduced from U. S. government listings. These have been carefully pruned and all local film libraries that cannot serve projectionists have been eliminated. There are policy, business, ownership and contract reasons why some 16-film libraries cannot co-operate with readers of IP. None of those are included below. All listed here should be able to serve the projectionist as an individual, as a member of his Local Union (which is a "civic group"), or as an agent for any group of persons who wish to book 16-mm prints.

Terms on which the film libraries listed here offer their wares must be ascertained by individual inquiry. Some of these libraries have 35-mm and 8-mm prints in addition to 16-mm; this also must be ascertained by direct inquiry.

The directory is arranged alphabetically by states and cities.

CALIFORNIA

ALTURAS

Modoc County Schools
Audio-Visual Education

Approximately 35 films—educational; distribution restricted to Modoc County.

BERKELEY

Farm Credit Administration of Berkeley
Approximately 15 films—on farm credit and cooperatives; distribution restricted to States in Farm Credit District.
U. S. Department of Agriculture Bureau of Entomology and Plant Quarantine

Six films—on white pine blister rust; distribution restricted to far Western States.
University of California Extension
Department of Visual Education

Approximately 3,000 films—educational; distribution restricted to 8 Western States.

BEVERLY HILLS

Beverly Hills Unified Schools
Audio-Visual Department

Approximately 100 films—educational, a few sponsored; distribution restricted to Beverly Hills public schools and civic organizations.

California Commercial Film Co.

One film—on sales training.

Donald Reed Motion Picture Service

Approximately 500 films—entertainment shorts and features.

Simmel-Meservey, Inc.

Approximately 50 films—educational.

BRIDGEPORT

Mono County Schools
Audio-Visual Education

Approximately 60 films—educational; distribution restricted to Mono County.

CARMEL

Carmel Camera Shop

Approximately 150 films—entertainment, educational, and sponsored.

CHICO

Chico City Schools
Audio-Visual Education

Approximately 20 films—entertainment, educational, and sponsored; distribution restricted to Chico.

COMPTON

Evangelistic Audio-Visual Association

Approximately 300 films—entertainment, religious, and sponsored.

EL CENTRO

Imperial County Schools
Audio-Visual Education Service

Approximately 350 films.—educational, some sponsored; distribution restricted to Imperial County public schools and civic groups.

FAIRFIELD

Solano County Schools
Audio-Visual Education

Approximately 500 films—educational, some sponsored; distribution restricted to Solano County.

FRESNO

Baptist Book Store

Approximately 200 films—primarily religious; distribution restricted to California.

Supplier's, Inc.

Tiny's Film Service

Approximately 325 films—entertainment and religious.

GLENDALE

Harold C. Ambrosch

Approximately 1,000 films—entertainment, educational, and religious.

New 3rd-Dimension Screen

For projection of three-dimensional still pictures Radiant Manufacturing Company has brought out a new portable projection screen, trade-named "Stereo-Master." It has an aluminum-treated surface which is held perfectly tight and flat, it is claimed, by means of a ratchet device called "Tensi-Lock." The new screen is available in two sizes—40" x 40" and 50" x 50".

Kodak Dividend to Employees

For the 41st year, this March, Eastman Kodak workers, like stockholders, will receive a dividend based on the company's profits. This year more than 22 million dollars will be shared among more than 50,000 employees—an average of \$440 each, although all employees do not receive the same amount. The dividend is in addition to wages and does not affect the wage scale.

Under the plan, there are no wage dividends unless the common stock dividend is more than 70 cents per share. For each

HOLLYWOOD

Academy Films

Approximately 15 films—educational.

Bailey Films

Approximately 860 films—entertainment, educational, and sponsored.

Billy Burke Productions

Approximately 70 films—professional medical and dental subjects; distribution restricted to professional groups.

Cinesound Studios

Six films—educational.

Coast Visual Education Co.

Some films, number not reported—entertainment, educational, and religious; distribution restricted to southern California.

Courneya Productions

Approximately 40 films—entertainment shorts and informational.

Family Films, Inc.

Approximately 25 films—entertainment and religious.

Film Classic Exchange

Approximately 1,000 films—entertainment, educational, and religious including old-time movies.

Hack Productions

Six films—informational and religious.

Hansen's Church Films

Approximately 125 films—religious; distribution restricted to western United States.

Hollywood Film Enterprises, Inc.
Approximately 300 films—entertainment shorts and features, educational, and religious.

Leader 16mm Film Library

Approximately 250 films—entertainment, educational, and religious.

HUNTINGTON PARK

Theodore N. Rogers Productions

Approximately 10 films—entertainment, educational, and religious.

(Continued on page 29)

20 cents common stock dividend above 70 cents, the wage dividend is one-half per cent. The 1952 common stock dividend was \$1.80 per share. This is \$1.10 more than 70 cents; since 20 goes into 110 5½ times, the wage dividend rate is ½ times 5½, or 2¾ percent. Each individual employee's wage dividend is 2¾ percent of his total earnings during the five-year period 1948-1953, and the actual payment to each varies accordingly. Payment takes place March 6th.

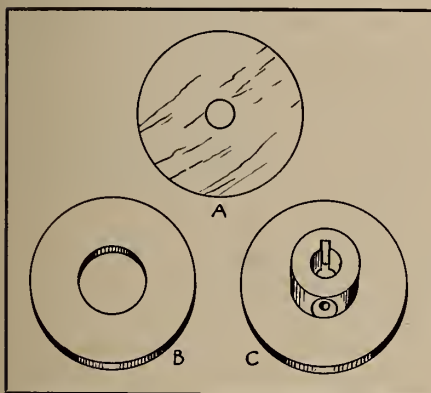
Alligator-clip extension leads save time in emergency whenever a replacement part can be clipped into circuit by such means, and properly installed after the show is over. Many or most of the condensers, resistors, and even transformers that are stocked in any theatre as emergency spares can be connected into action in this way, the faulty part they replace being snipped out of circuit with diagonal pliers. A replacement that would otherwise take many minutes can be thus accomplished in a few seconds.

IP LETTERS TO THE EDITOR

To the Editor of IP:

In the box to which this is attached you will find a device (illustrated below) which I have used for 12 years and found a complete answer to the problem of maintaining satisfactory upper reel pull-down tension.

Proper tension is that which completely eliminates oscillation or non-uniform



B represents an ordinary iron washer, outside diameter measures $1\frac{3}{4}$ inches; diameter of hole, $\frac{3}{4}$ inch. C shows this washer united with Simplex part C-282. This part has a $\frac{3}{4}$ inch outside diameter, and is pressed into the washer in an ordinary bench vise. A is a leather washer used in place of Simplex leather washer MA-143. The result is a larger friction surface, for steadier pulldown tension.

form reel speed. Irregular reel speed, if it exists, may be a sizable cause of damage to film perforations. To avoid this, many projectionists do not oil the upper reel shaft bearing, but I think that is mechanically wrong.

Therefore, I have made this device. The usual collar on the reel shaft inside the upper magazine (Simplex part C-282—Ed. note) is modified by the addition of an ordinary washer of $1\frac{3}{4}$ -inch o.d. The pressure that can be obtained from ordinary vise jaws will do this job. A leather washer $1\frac{5}{8}$ -inch o.d. is then used instead of the regular washer (instead of Simplex washer MA-143—Ed. note).

Pressure Improved

When this modified equipment is installed on the upper magazine shaft, I find that the spring adjusting collar, or nut, located outside the magazine will have to be turned toward the shaft end so that the nut side is about flush with the end of the shaft. This places a satisfactory amount of pressure on the leather disc, and the pressure will remain constant for years.

Please extend to Mr. Mitchell my thanks for the great amount of informa-

tion which he has packed into the pages of INTERNATIONAL PROJECTIONIST.

ARNO WOLD
Opportunity, Wash.

To the Editor of IP:

In regard to safety and nitrate motion picture film I feel it quite understandable that some of the craft's elders or seniors dislike to adapt themselves to the use of safety film. As you mentioned in the article, by now we've all been using safety prints for a long while, and the only difference there seems to be from here is that it requires a bit more time and care to splice.

I feel the present-day safety stock film picture image is quite equal to the usual nitrate stock image. It would seem to me that a good deal of the so-called beefing might well come under the saying of not being able to teach an old dog new tricks. I seriously doubt if any of the squawks and beefs come from these parts as it would be a waste of time to interfere with the wheels of progress. I myself like the stuff as little as a stiff starched shirt, which I can't wear. But I agree it's here to stay so let's get used to it, although some of the boys will perhaps continue to grumble.

AL KUIPER
Minneapolis, Minn.

Unsolicited Tribute

SOCIETY OF MOTION PICTURE AND TELEVISION ENGINEERS



November 19, 1952

Miss R. A. Entracht
International Projectionist
19 West 44 Street
New York 36, New York

Dear Miss Entracht:

We here at SMPTE are particularly conscious of the need and the difficulty of maintaining in a technical publication, month after month, well-rounded coverage, prestige, attractive format and all the other things, most of them details, that are important to the publication's personality.

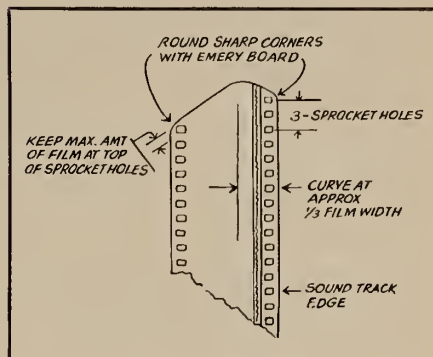
This morning the November issue of International Projectionist arrived, and it is in my opinion even better than usual. The transistor article is particularly good since it tells in ordinary language what transistors are, how they work and, without irresponsible flag-waving, what they hold for the future of our particular business. Please accept my personal congratulations for a good job well done. IP is a most useful service to the trade.

Kindest regards,

Boyle Remick
Executive Secretary

To the Editor of IP:

I notice that from time to time you publish good professional tips and I believe I have one worthy of publication in IP. I am referring to a good film-end clip to avoid excessive film-end damage. (See illustration below.) I, for one, like



to have a good clean film-end to start in that ever-evasive reel slot.

I find that this clip helps to keep the leaders and tails in better condition and for a longer time. Also, it is not always necessary to enter the film in the reel slot—one turn of the reel while holding the film firm on the hub until it overlaps and clinches will do the trick.

MAURICE S. GRACE
Local 150, Los Angeles

OBITUARIES

Calvin W. Bornkessel, 70, Local 253, Rochester, N. Y., died after a lingering illness. He was a charter member of the Local and held various official offices during the years. He served as president for nine years, and as business representative for four years. Bornkessel worked as projectionist at the Palace Theatre for twenty years, until illness forced him to retire several months before his death. He is survived by his wife and son, Frank, also a member of the Local.

Sam Kevitch, 63, Local 307, Philadelphia, Penna., died suddenly last month. He worked in the projection room of the Carman Theatre. George James, also a member of Local 307, died recently. For many years James worked as projectionist in the Kent Theatre.

William Weaver, 79, Local 143, St. Louis, Mo., died last month. Weaver was one of the oldest members of the Local, having joined the organization back in 1908.

Thomas J. Kearney, president of Local 162, San Francisco, succumbed to a heart attack following surgery. He joined the Local back in 1933, and served in various official capacities. He was appointed auditor for the Local in 1942 and held that post until 1947 when he was elected secretary. In 1951 he was elected president of the Local and held that office until his untimely death.

The American Labor Movement

Prepared by the Department of Labor for official use and reference, this history traces labor activity and legislation from Colonial times to today.

Chapter V

World War II and After

[Continued]

WORKERS in a number of the heavy mass-production industries obtained in many instances "package" increases estimated to be worth 15 cents an hour, including the value of added holidays with pay, health and welfare provisions, or other "fringe" benefits.

Yet, as prices continued to rise, workers found themselves worse off than when the war ended. By December 1947, the cost of living for the city worker averaged about 30 percent higher than on VJ-day.

Contract negotiations proceeded more slowly during 1948. It was late in May 1948 before general industrial resistance to wage increases was overcome by the unions. At that time General Motors signed a 2-year agreement with the United Automobile Workers (CIO) for an 11-cent hourly increase. This agreement provided also for subsequent automatic adjustments in wages based upon changes in the consumers' price index of the United States Bureau of Labor Statistics.

Other settlements soon followed. In June, the United Mine Workers negotiated a \$1-a-day increase in wages and a boost from 10 to 20 cents in the payment, per ton of coal mined, to their welfare and retirement fund, which had first been established in a contract between the union and the Government in 1946. Several weeks later, the steel industry agreed to wage increases averaging 13 cents an hour.

Fringe Benefits

During 1949, emphasis in negotiations shifted from wages to pensions and other supplementary benefits intended to protect the health and welfare of workers and their families. This was particularly true after the United States Supreme Court, by declining to review a lower court decision in the *Inland Steel* case, ruled in effect that the problems of health and welfare, and old-age pensions were proper subjects for collective bargaining.

Particularly significant as a pattern were the pension and health benefits negotiated by the United Steelworkers of America (CIO) with all major steel producers, and by the United Automobile Workers (CIO) with the Ford Motor

Co. The steel agreements were negotiated in the autumn of 1949 (after a strike that lasted more than a month) following rejection by the companies of pension and social insurance proposals suggested by a Presidential fact-finding board. The steel plans generally provided pensions of \$100 a month, including payments under the prevailing social security laws, for employees retiring at age 65 after 25 years of service. Health and welfare benefits for both workers and their families were also included in these agreements.

For over a century, trade-unions developed in the United States without specific Federal legislation to aid in their activities. Prior to 1926, the attitude of the courts in administration of the law as it related to labor had been primarily restrictive, with injunctions, damage suits, and criminal prosecutions in frequent use.

Recent Labor Legislation

The Railway Labor Act of 1926 was a significant reversal of the trend of legal opposition to union activity. This legislation, proposed by both management and the unions, was based on the premise that peaceful labor relations can be attained through free collective bargaining between employers and unions. This act was sustained by the United States Supreme Court in 1930.

The Norris-LaGuardia Act of 1932 brought to an end what has often been called the era of "government by injunction" in the history of labor-management relations. It eliminated major judicial restrictions on strikes, picketing, and boycotts. The act also eliminated the use of the "yellow dog" contract, and

limited the liability of unions and their officers and members for unlawful acts of individual officers, agents, or members.

With the passage of the National Labor Relations Act of 1935 (Wagner Act), the Congress enacted its first law dealing specifically and entirely with problems of trade-union organization and activities outside of the railroad industry. This law guaranteed to employees "the right to self-organization, to form, join, or assist labor organizations, to bargain collectively through representatives of their own choosing, and to engage in concerted activities for the purpose of collective bargaining or other mutual aid or protection" (Section 7, NLRA).

The act created a National Labor Relations Board with two major functions: (1) to prevent and remedy "unfair labor practices" by employers which discourage or interfere with self-organization of employees or the practice of collective bargaining; and (2) to designate the bargaining representatives in the event of controversy over which union should represent employees or over the size and composition of the unit to be certified for bargaining purposes. As to the bargaining unit, the Board might decide as "appropriate" a unit composed of only skilled craftsmen, or all production workers in a factory or, in some instances, a number of different factories or employers depending upon the facts of the case.

Taft-Hartley Provisions

The growth of union membership from less than 4 million in 1935 to over 15 million in 1947 reflected the encouragement to collective bargaining expressed in the Wagner Act. A shift in legislative policy occurred with the passage of the Labor Management Relations Act of 1947 (Taft-Hartley Act). It was enacted in June 1947 in spite of strong objections by labor and a Presidential veto.

Certain agreement provisions, such as the closed shop, were banned under the revised law, while others, such as the union shop, check-off, welfare funds, grievance procedure, and contract termination provisions, were restricted or regulated. A list of "unfair labor practices"—actions which the unions might not undertake without violating the law—was added to counterbalance, according to its advocates, the unfair labor practices prohibited employers under the Wagner Act.

The Labor Management Relations Act also imposed certain limitations on strikes and lock-outs. Secondary boycotts, for example, became "unfair labor practices" and stoppages over such issues might be penalized by court action and law suits for damages.

(Continued on page 27)

100-WATT SLIDE PROJECTOR



For small-slide projection in association with 16-mm showings, Tv studios, or for sales and advertising purposes, RCA offers this remote-controlled slide projector. It is equipped with a forced-draft-cooled 100-watt incandescent lamp, and has a coated f/3.5 lens. Turret accommodates 16 two-inch square slides, is motor-rotated and can be controlled from a distant location.

IA-IP Amateur

Radio Bulletins

All-Time Contest Winner

By AMOS KANAGA, W6BAA

Secretary, Local 409,

San Mateo, Calif.



•
Amos
Kanaga
•

WINNER of the all-time high contest (no prizes in this one) for most IA stations worked since end of World War II is W6PFF, Brother Frank Champ-lin of Local 150 in Los Angeles. Con-gratulations, Frank!

Winners of the 1952 IA-IP contest (FB prizes!) will be announced in this column next month. By the way, gang, first winner has first choice among the prizes, next highest second choice, etc. This method of awarding 'em will enable you fellows to get the prize you would rather have.

Coming back to W6PFF, winner of the all-time high: he scored 65 confirmed and half a dozen not confirmed. Runners up, and pretty close, were W6MU "Bar-ney" Barnett; W6DDQ, Phil Wisdom, and W6GSW Jim Evans.

W5DYV Brother Paul Belian of Local 604 crashed into the "IA-IP Worked 10" and is now hot after that Gold Award.

A Happy and DX New Year to you all!

FOR LATEST

ALPHABETICAL

LISTING OF

IA RADIO MEN

SEE NEXT PAGE



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W1BCE—C. L. Crowley, L. 459, Norwich, Conn.
W1BHJ—Otto Halquist, L. 182, Boston, Mass.
W1BTW—J. Roland Lizotte, L. 546, Lowell, Mass.
W1BVB—Don Fancher, L. 439, New London, Conn.
W1EBQ—Woodrow Guile, L. 459, Norwich, Conn.
W1GR—Al Hyde, L. 223, Providence, R. I.
W1LW—Norman Soules, L. 459, Norwich, Conn.
W1GND—Wilbur Tracy, L. 437, Brackton, Mass.
W1IYY—Harold Wyman, L. 96, Worcester, Mass.
W1JBU—George Gravel, L. 96, Worcester, Mass.
W1JWN—Ted Kahn, L. 86, Fitchburg, Mass.
W1KKJ—Howard Bruya, L. 505, Waltham, Mass.
W1NZE—Arthur Madsen, L. 182, Boston, Mass.
W1WI—Tom McNamara, L. 505, Waltham, Mass.

W2AMB—Fred Huff, L. 306, New York City
W2AOM—Jack Carrotson, L. 306, New York City
W2ARP—F. Ramthor, L. 534, New Brunswick, N. J.
W2BOR—William Axton, L. 524, Glens Falls, N. Y.
W2BDK—Lloyd Matteson, L. 290, Gloversville, N. Y.
W2CYQ—Frank Larham, L. 108, Geneva, N. Y.
W2DZA—Alex Knight, L. 353, Port Jarvis, N. Y.
W2DPA—Jack North, L. 640, Nassau Co., N. Y.
W2HRJ—Charles Beckett, L. 462, Vineland, N. J.
W2HWF—A. Dietrich, L. 306, New York City
W2MYJ—Mike Revzin, L. 306, New York City
W2NAJ—Pete Horgan, L. 306, New York City
W2NFU—Sydney Trisch, L. 306, New York City
W2OCL—Edward Ricca, L. 306, New York City
W2ORS—Charles Roop, L. 418, Camden, N. J.
W2PVB—K. H. Allfrey, L. 290, Gloversville, N. Y.
W2QYQ—Alfred Beckett, L. 462, Vineland, N. J.
W2RQZ—Frank Lipinske, L. 337, Utica, N. Y.
W2RUA—Hugh Newcombe, L. 462, Vineland, N. J.
W2TSN—Victor Bufts, L. 365, Warren Co., N. J.
W2VSO—Frank Tamborel, L. 306, New York City
W2WZX—Erick Pattrick, L. 244, Newark, N. J.
W2ZCE—John V. Richards, L. 1, New York City

W3BBV—Nelson Stover, L. 283, York, Pa.
W3BJ—Al Edwards, L. 307, Philadelphia, Pa.
W3JMA—Ralph Rushworth, L. 181, Baltimore, Md.
W3KNY—Harris Good, L. 661, Reading, Pa.
W3MEY—Leo Foran, L. 335, Bradford, Pa.
W3MHE—Chas. Gibson, L. 444, New Kensington, Pa.
W3PMY—John Nordine, L. 296, Warren, Pa.
W3RXT—Bernard Rask, L. 171, Pittsburgh, Pa.
W3TVM—Harry Drew, L. 171, Pittsburgh, Pa.

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W4AEI—Austin S. Baumann, L. 507, Macon, Ga.
W4BWN—Bob Cobble, L. 405, Knoxville, Tenn.
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W4DPT—Adrian McCroskey, L. 446, Astoria, Ore.
W4EHC—Roland E. Coffee, L. 808, Gainesville, Ga.
W4EGG—Marvin Storler, L. 144, Memphis, Tenn.
W4FGK—D. Hoyle Knight, L. 412, Bradenton, Fla.
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W4HRR—Joseph R. Good, L. 518, Augusta, Ga.
W4IUC—Ruert E. Carter, L. 225, Atlanta, Ga.
W4JIC—Chet Ruffner, L. 264, Newport News, Va.
W4JXJ—Gilbert R. Knapp, Jr., L. 55, Roanoke, Va.
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W4MEP—J. Wyatt, L. 793, Huntsville, Ala.
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W4PKT—M. H. Sonders, L. 507, Macon, Ga.
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W4RMT—E. M. Karcher, L. 482, Champaign, Ill.
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W5CQO—Rajmunt J. Machu, L. 597, Waco, Tex.
W5DYV—Paul Belian, L. 604, Corpus Christi.
W5IBI—Wm. Armstrong, L. 183, Beaumont, Tex.
W5IIP—Pat Talbot, L. 249, Dallas, Tex.
W5IMT—A. S. Johnstone, L. 293, New Orleans, La.
W5MPG—Rex Parker, L. 204, Little Rock, Ark.
W5ODA—William Couse, L. 450, Mason City, Ark.
W5OQJ—Norman Olstad, L. 279, Houston, Tex.
W5PBA—Hulon R. Byrne, L. 540, Baton Rouge, La.

W6AGN—Arthur Hansen, L. 297, San Diego, Calif.
W6ALO—Tom Jentges, L. 504, Santa Ana, Calif.
W6AOR—Francis Sarver, L. 695, Los Angeles.
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W6BAA—Amos Kanaga, L. 409, San Mateo, Calif.
W6BEP—C. C. Applegate, L. 187, South Bend, Ind.
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W6BPT—Roy Pinkham, L. 431, San Jose, Calif.
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W6BWF—James Miller, L. 695, Los Angeles.
W6BWI—Harry Morse, L. 297, San Diego, Calif.
W6GAG—August DeGrazia, L. 150, Los Angeles.
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W6CJ—Perry Stillely, L. 695, Los Angeles.

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W8ZNO—Ken Rowe, L. 766, Ironwood, Mich.
W8SXD—Dan Denfenbaugh, L. 735, Mt. Clemens

W9AZA—Ken Mass, L. 721, Elkhorn, Wisc.
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W9HQ—E. M. Renfro, L. 110, Chicago
W9LBL—R. B. Connelly, L. 110, Chicago
W9NLP—Rolly Young, L. 110, Chicago
W9NPG—John Bain, L. 323, Springfield, Ill.
W9OL—W. P. Atchison, L. 323, Springfield, Ill.
W9PTG—Clifford S. Smith, L. 414, Wichita, Kans.
W9PTH—Larry Applegate, L. 187, South Bend, Ind.
W9RTA—Herb Kleinbeck, Sr., L. 110, Chicago.
W9VNV—Charles Mitten, L. 194, Indianapolis, Ind.
W9TMM—Phil Richardson, L. 421, Herrin, Ill.

W0BSO—Don C. Atherton, L. 191, Cedar Rapids, Ia.
W0BTT—R. R. Kerwood, L. 586, Columbus, Nebr.
W0BVO—Paul Hunter, L. 191, Cedar Rapids, Iowa
W0CBV—Alden P. Baker, L. 573, Moberly, Mo.
W0DOL—E. M. Karcher, L. 482, Champaign, Ill.
W0FRH—W. Van Valdenburg, L. 389, Ft. Dodge, Ia.
W0GEN—Jra Hasket, L. 491, Parsons, Kans.
W0GSW—J. E. Evans, L. 242, Pittsburg, Kans.
W0JKU—John Cresap, L. 242, Pittsburg, Kans.
W0QI—E. Van Duyn, L. 191, Cedar Rapids, Iowa
W0SJK—O. S. Keay, L. 219, Minneapolis
W0SLV—Walker Fausett, L. 395, Ann Arbor, Mich.
W0SWM—Earl E. Leonard, L. 695, Los Angeles
W0UOP—Clair Rockholz, L. 286, Des Moines, Iowa
W0VBZ—R. H. Hecht, L. 143, St. Louis, Mo.
W0WHV—Max Hollingsworth, L. 465, Joplin, Mo.
W0WSH—H. Allredge, L. 443, Jefferson City, Mo.
W0ZIM—M. Geiskiang, L. 230, Denver, Colo.

Canada

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VE1DQ—Art M. Growell, L. 680, Halifax, N. S.
VE3ABV—Jack Snider, L. 173, Toronto, Ont.
VE3AHJ—Walt Mann, L. 467, Ft. William, Ont.
VE3AYQ—C. D. O'Neill, L. 461, St. Catharines, Ont.
VE3APR—Harry McClelland, L. 582, Brantford, Ont.
VE3BAK—F. Winkle, L. 173, Toronto, Ont.
VE3BVC—E. H. Whyat, L. 173, Toronto, Ont.
VE3BWG—Lou Lodge, L. 173, Toronto, Ont.
VE3BZJ—L. R. Kilbourne, L. 622, Port Huron, Mich.
VE3DBF—M. Winslow, L. 461, St. Catharines, Ont.
VE3DFK—Frank Barney, L. 173, Toronto, Ont.
VE3DLX—Ed Barber, L. 580, Windsor, Ont.
VE3OGH—H. Horner, L. 173, Toronto, Ont.
VE3TE—Tcm Burrows, L. 173, Toronto, Ont.
VE5AR—L. W. Nelson, L. 406, Moose Jaw, Sask.
VE5JK—Jack Kyle, L. 295, Regina, Sask.
VE5RJ—Ron Marchant, L. 300, Saskatoon
VE7ACB—F. J. McGuire, L. 680, Halifax, N. S.
VE7ALW—Merle Wilson, L. 648, Vancouver, B. C.
VE7APN—Jack Stone, L. 348, Vancouver, B. C.
VE7APU—Tom Hepple, L. 348, Vancouver, B. C.
VE7BJ—Edward S. Brooks, L. 348, Vancouver, B. C.
VE7MN—C. H. Richards, L. 348, Vancouver, B. C.
VE7OT—Marvin Thoreau, L. 348, Vancouver, B. C.
VE7US—C. Moorehouse, L. 348, Vancouver, B. C.

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AMERICAN LABOR MOVEMENT

(Continued from page 24)

Special rules were written into the law governing controversies or strikes which imperil the national health or safety. In any such dispute or strike, the President of the United States may appoint a "board of inquiry" to investigate the facts. Thereafter, an injunction forbidding the occurrence or continuance of a stoppage for a period of 80 days can be obtained. During this "cooling off" or "waiting" period, further efforts are made to settle the dispute. If no voluntary agreement is reached within 60 days, the employees are given the opportunity to vote by secret ballot as to whether they accept the "final offer" of their employer. After all these steps are taken, however, the law requires that the injunction be dissolved.

It is important to emphasize that under the law workers in the United States are not prohibited from quitting their jobs in attempts to improve their wages or working conditions. The "right to strike" is considered by organized labor as a part of the guarantee in the United States Constitution which forbids "involuntary servitude."

In addition to legislation regulating labor-management relations, other important acts dealing with wages and hours, social security, employment security, job training, and workman's compensation have been enacted during the last 25 years for the benefit of the working man. Probably the most important of the Federal laws, from the standpoint of number of workers covered, are the Fair Labor Standards Act, which sets minimum wage and hour standards for workers manufacturing goods for, or engaged in, interstate commerce; and the Social Security Act, which provides old age and survivors insurance, unemployment insurance, and other benefits.

[TO BE CONTINUED]

New Film Cleaner

A chemical similar to refrigerator fluid is now offered by Du Pont for cleaning motion picture film. It is known as Freon-113, a fluorinated hydrocarbon, non-flammable, fast-drying. It is said effectively to dissolve and wash away oil and gums from photographic film without affecting the emulsion and without any damage to colors in color prints. Combined with beeswax or cetyl alcohol it is recommended as a lubricant for motion picture film; and can be so applied that it both cleans and lubricates in one operation. Du Pont adds that though Freon-113 is "much less toxic" than other cleaning preparations, it still should be used only in well-ventilated rooms, and the hands of the user protected by rubber or neoprene gloves.

CHOSEN

Out of many comes
one . . . the one that is head and
shoulders above the rest . . .
the one
and only

WALKER
HIGH INTENSITY
SCREEN

CHOSEN

for Natural Vision "BWANA DEVIL"
the three-dimensional feature that's break-
ing box office records . . . but you must see
Walker screens to believe your eyes . . . to
believe that Walker is the one screen that has
absolute crystal clarity, snow-white bril-
liance, long-lasting economy.

NATIONAL THEATRE SUPPLY has everything for
your special "3rd dimension" needs: mechanical and
electrical projector interlocks, 5000 ft. magazines, 5000
ft. reels and 5000 ft. rewinds. And remember, 27 years
of National Theatre Supply experience and know-how
can help you with all your projection problems.

NATIONAL
THEATRE SUPPLY

Division of National • Simplex • Bludworth, Inc.

NATURAL VISION

(Continued from page 8)

not be levelled. It is installed at a distance below the port that will provide easy clearance for removing the filter. (The filter is removed from the port for cleaning and also whenever a standard, non-stereo show is projected. Cleaning—of both sides of each filter—is done daily with Staticmaster brush.)

The filter marked "left" is installed over the left port facing the screen and the one marked "right" over the other; each filter also is marked on either side "toward lens" and "toward screen," and is installed accordingly. The spare filters also are so marked—this is why two spares are needed; they are not interchangeable.

The instructions add this warning: **NEVER PROJECT WHITE LIGHT THROUGH THESE FILTERS. YOU WOULD RUIN THEM.**

Running the Show

Following are the exact instructions given for running the picture *Bwana Devil*.

This show consists of four 23" reels marked as follows: "Left First Section," "Left Second Section," "Right First Section," and

"Right Second Section." Each section runs approximately 50 minutes.

Thread reel marked "Left First Section" in left machine facing screen. Thread reel marked "Right First Section" in right-hand machine facing screen. Be absolutely positive that start marks are threaded the same on both projectors as a difference of one frame between projectors is noticeable and results in eyestrain to the viewers.

Focusing before the show starts is done without wearing polaroid glasses. For proper focusing start both projectors, open left machine light and focus same. When sharp focus is obtained douse this light, open light on right machine and focus. Mark the position of each adjustment. Whenever regular pictures are to be shown remove the filter and re-focus. Mark this focus adjustment position also.

During Operation. The credit titles of *Bwana Devil* afford an excellent opportunity for checking horizontal lineup and focus.

To check horizontal lineup do *not* wear glasses. Both titles should be superimposed. If titles are not in proper alignment use framing handle on one projector only.

To check focus wear glasses. Cover left eye. Check focus on right machine. Then cover right eye and check focus on left machine.

Film Break. In the event of a break in the film, stop the projectors immediately and proceed as follows:

If your print has footage numbers, use a

china marker to give you start frames on the same number on both projectors.

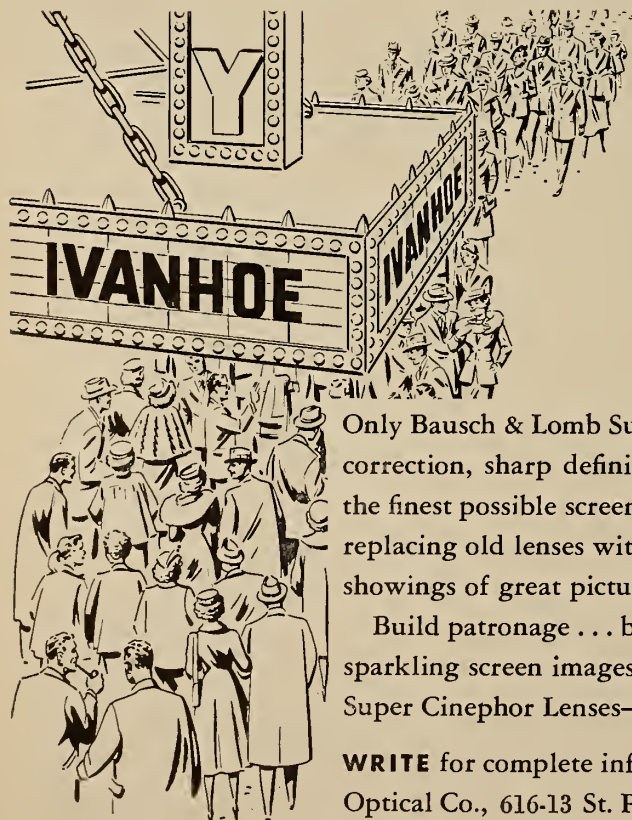
In the event your print has no footage numbers, pull down to first frame of next scene on both projectors. Use this first frame as start mark. Mark starting frames "Top" and "Bottom" to avoid any chance of misframe on starting.

When patching *Bwana Devil* film, if it becomes necessary to sacrifice a frame or frames, insert an equal number of frames of opaque leader so that the two reels will always remain matched, and run sound from the unpatched reel.

Because 23" reels are used, it is necessary to raise the rewinder approximately three inches. This can be done by remounting it on a suitable block of wood or, preferably, by having an iron strap support bent to shape by any local iron worker.

Free Eastman Film

Running 13½ minutes, a 16-mm Eastman Kodak Kodachrome sound film entitled "Behind Your Snapshot" is distributed without charge to the borrower except for postage and insurance. It is "institutional advertising" that takes the audience behind the scenes in the manufacture of photographic film, showing the processes of production and the care taken to assure proper and uniform quality. Bookings can be arranged through Eastman's Camera Club and School Service, 343 State Street, Rochester 4, New York.

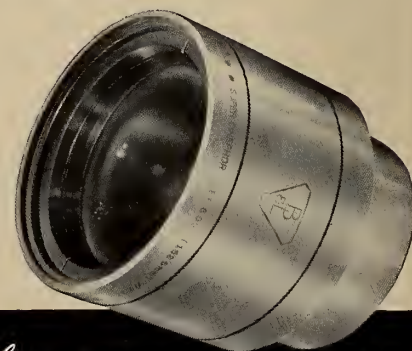


Leading Chains and Drive-ins CHOOSE B&L SUPER CINEPHOR LENSES

Only Bausch & Lomb Super Cinephor Lenses provide the extreme color correction, sharp definition and edge-to-edge brilliance necessary to project the finest possible screen images. That's why theatres nation-wide are replacing old lenses with Super Cinephor Lenses for their showings of great pictures.

Build patronage . . . build profits . . . with vivid, sparkling screen images. Replace NOW with B&L Super Cinephor Lenses—44% to 100% brighter!

WRITE for complete information to Bausch & Lomb Optical Co., 616-13 St. Paul St., Rochester 2, N. Y.



Bausch & Lomb

Super Cinephor Projection Lenses

LOCAL 16-mm SOURCES

(Continued from page 22)

LAGUNA BEACH

Audio-Visual Supply Co., Inc.

Approximately 180 films—educational and religious; distribution restricted to California, Arizona, and Nevada.

LONG BEACH

Long Beach Public Library
Film Service

Approximately 100 films—informational, religious, and sponsored; distribution restricted to holders of public library cards and for group use only.

Merkle Film Library

Approximately 250 films—entertainment and religious.

U. S. Coast Guard

Commander, Eleventh Coast Guard District

Approximately 20 films—on the Coast Guard and its activities; distribution restricted to Eleventh Coast Guard District.

LOS ANGELES

Anti-Defamation League of B'nai B'rith
Pacific Southwest Regional Office

Approximately 25 films—educational and religious, primarily on intercultural understanding; distribution restricted to geographical region.

Canadian National Railways

Motion Picture Library

Ten films—travelogues on Canada; distribution restricted to geographical region.

Canadian Pacific Railway

Approximately 40 films—travelogues on Canada; distribution restricted to geographical region.

Cine-Craft

Approximately 200 films—entertainment shorts; distribution restricted to Los Angeles area.

Congregational Christian Churches

Department of Visual Aids

Approximately 20 films—religious; distribution primarily to churches.

Craig Movie Supply Co.

Approximately 500 films—entertainment and educational; distribution restricted to 11 Western States.

William M. Dennis

Film Libraries

Approximately 900 films—entertainment, educational, religious, and sponsored.

Films, Inc.

Approximately 1,500 films—entertainment, educational, and religious.

General Electric Co.

Advertising and Sales Promotion

Approximately 50 films—educational and sponsored; distribution restricted to Los Angeles area.

Ideal Pictures

Approximately 6,000 films—entertainment, educational, religious, and sponsored; distribution restricted to geographical region.

Los Angeles County Museum

Exposition Park (17)

Approximately 400 films—educational, including Spanish-language films.

Los Angeles Public Library

Film Service

Approximately 200 films—educational and sponsored; distribution restricted to Los Angeles.

The Methodist Publishing House

Audio-Visual Department

Approximately 1,500 films—primarily religious; distribution restricted to geographical area.

A. F. Milliron Co.

Some films, number not reported—educational and sponsored.

National Conference of Christians and Jews

Approximately 15 films—on racial and religious understanding; distribution restricted to geographical region.

North American Aviation, Inc.

International Airport

Three films—on jet aircraft and guided missiles.

Pan American World Airways

Twelve films—primarily travelogues; distribution restricted to Los Angeles area.

Presbyterian Distribution Service

Approximately 80 films—all religious; distribution restricted to geographical area.

RKO Radio Pictures, Inc.

Approximately 300 films—primarily entertainment features; distribution restricted to geographical region and prior location approval.

Ralke Co.

Approximately 150 films—entertainment, educational, and sponsored.

Singer Sewing Machine Co.

Manufacturers Agency

Five films—on sewing and sewing machines; distribution restricted to surrounding territory.

Standard Talking Film Service, Inc.

Approximately 150 films—educational and informational, all sponsored films; distribution restricted to geographical region.

U. S. Department of Commerce

Civil Aeronautics Administration

Approximately 400 films—on aviation education and training.

U. S. Department of the Treasury
State Director, Defense Bonds Division

Three films—about the United States and the Korean situation; distribution restricted to California.

U. S. Marine Corps

District Headquarters Recruiting Station

Approximately 20 films—about the Marine Corps; distribution restricted to geographical region.

United World Films, Inc.

Approximately 2,000 films—entertainment, educational, religious, and sponsored.

University of California, Visual Education

Approximately 3,000 films—educational; distribution restricted to 8 Western States.

University of Southern California

Audio-Visual Service Department

Approximately 300 films—entertainment shorts and educational.

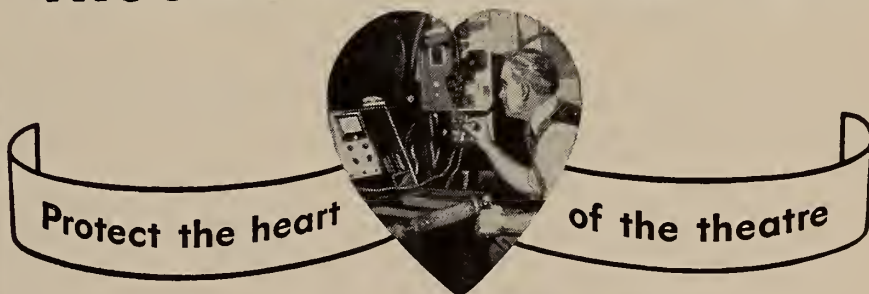
[TO BE CONTINUED]

Valley for

CURTAIN CONTROLS,
TRACKS and SPECIAL
OPERATING DEVICES

VALLEN, Inc.
AKRON 4, OHIO

THOUSANDS OF EXHIBITORS



Protect the heart

of the theatre

with **RCA SERVICE**
and there's a reason why:

RCA SERVICE is

Prompt • Efficient • Courteous



RCA Service Company, Inc.

A RADIO CORPORATION OF AMERICA SUBSIDIARY
CAMDEN, NEW JERSEY

MEASURING SOUND ABSORPTION

(Continued from page 20)

crophone is moved up and down along the tube by the steel pipe until the reading on the vacuum-tube voltmeter (electronic voltmeter in Figure 1) indicates that the microphone is in the neighborhood of a point of minimum sound pressure. The pipe is then clamped and the microphone position readjusted by the threaded rod until the exact pressure minimum is found. The minimum reading of the voltmeter in decibels is recorded.

The microphone is then moved in the same way to a point of maximum sound pressure and the voltmeter reading again recorded. The difference between these two readings is designated *delta db*. The absorption coefficient corresponding to the *delta db* is found from Table 1.

Simulated field measurements made on samples of some 50 acoustic materials by the long tube method and the reverberation room method resulted in an average difference of -0.07 . It is assumed that the tube method gives results too low by this amount, and 0.07 is applied as a correction to each coefficient measured by the tube. Therefore, the absorption coefficient corresponding to *delta db* and found from Table 1 is corrected by adding 0.07 .

Results Obtained

In a series of measurements made on acoustic plaster, it was found that the absorption coefficient varies from point to point by considerable amounts, and that differences in absorption coefficient are closely correlated with differences in the appearance of the material. On acoustic plaster, therefore, it is important to make measurements on as many different locations as practicable, and especially on as many points having different surface texture as practicable. Acoustic tile appears to be more uniform, and it may not be necessary to sample as many points on tile as on plaster.

The availability of a portable apparatus for non-destructive field testing makes it possible to correlate the appearance of a small area of acoustic plaster with its sound absorption. It is believed that the workmanship of the plasterer affects the sound absorption of the finished plaster to a large extent, but it is not known just how the plaster should be applied for best results. The details of workmanship that are believed to affect sound absorption include the pressure of the trowel on the plaster, time of final troweling after application, con-

sistency of mix, and the texture imparted to the surface. Different textures are obtained by the use of a stiff straw brush or a nail perforator, or both. Considerable difference of opinion exists concerning the importance of each of these factors and their proper manipulation.

The development of the long-tube method makes possible objective evaluation of these various factors. It makes possible measurement of the sound absorption of small areas, so that samples of many different types of workmanship can be taken.

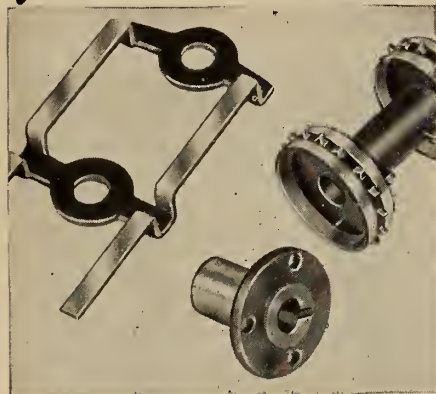
Another recent example of the usefulness of the long-tube method was the task of measuring the sound-absorption coefficients of two batches of commercial acoustic tiles. It was desired to select from each batch a smaller group of tiles nearly homogeneous in sound absorption.

The necessity of avoiding transverse modes of vibration sets an upper limit to the frequency at which a tube can be used. The lower limit of usable frequency is set by the requirement that the tube must not be too long for easy handling. These limits restrict the tube described here to frequencies near 512 cps.

Improvements in the Instrument

It would be possible to cover the frequency range from 256 to 2,048 cps by making use of a separate tube of suitable size for each frequency. This has not been done because of the awkwardness of such an arrangement. However, it appears possible to replace the long tube with a short one which, in essence, is so short as to constitute a cavity. Such a device would be readily portable, and should operate over an extended frequency range. A preliminary investigation of this method has been started.

Free PROJECTOR PARTS

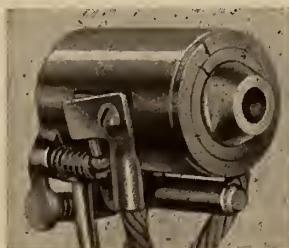


No, we're not giving them away—but, if Projection equipment is maintained the resulting patron satisfaction will boost Boxoffice sales to more than offset the cost—Your theatre will earn more and at the same time earn an enviable reputation for good showmanship.

LAVEZZI MACHINE WORKS

4635 West Lake Street
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CUT CARBON COSTS! INCREASE LIGHT!



MADE FOR MOST ALL
MAKES OF LAMPS

Get High Intensity Results
from your Present Equipment

WITH

HUFF'S CARBON COOLERS

No copper coated carbons needed.
Less amperage. Simple installation.

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• The NEW, improved, positive method of permanently patching all types and makes of film—8mm., 16mm., 35mm., Trucolor, Technicolor, Kodachrome, Nitrate and Safety Film.

Used and endorsed by Projectionists in countless theaters.

specifically for lasting Patches.

ESSANNAY ELECTRIC MANUFACTURING CO.
1438 North Clark Street Chicago 10, Illinois



NEW COLOR TV TUBE

(Continued from page 14)

strips during one field; deflected in the opposite direction to activate the "blue" strips during another field; or not deflected at all, in which case it activates the green strips—as in Figure 2. These strips being very narrow, the human eye cannot resolve them at distances of more than a foot or so; the three merge into one full-color picture.

If no color filters are used at the TV camera, the successive fields will not differ from each other according to the color values of the scene being televised; hence, at the receiving end, the scanning of the three phosphors will not vary according to color but remain in balance, and thus merged in balance, will look white. The tube, therefore, reproduces either black-and-white or color images, whichever is transmitted.

It does need a band width $2\frac{1}{2}$ times as wide as conventional black-and-white transmission to convey comparable information, however. Nominally, the bandwidth should be three times normal, since each field is transmitted three times, once in each color; whereas for black-and-white the same amount of detail is conveyed by transmitting each field once. However, Paramount decided to make its operation compatible with the color standards of the Columbia Broadcasting System, using a bandwidth approximately $2\frac{1}{2}$ times that of standard telecasts.

As a standard of color performance Paramount chose Technicolor 35-mm motion picture film results. The new tube approaches, possibly does not completely equal, Technicolor quality; observers who saw the tube demonstrated in the New York Paramount Laboratory called the color quality very, very good.

Theatre TV Requirements

For large-screen theatre use, the tube would have to be operated at very much higher voltages. The accelerating voltage—that is, the potential that attracts the electrons of the beam to the fluorescent surface—is now approximately 5,000 volts. This produces an image of adequate brightness for home or industrial use; but if that image were to be optically enlarged to fill a theatre screen, an enormous increase in brightness would be needed, to produce which the accelerating potential would have to be upped to the 50,000–100,000 volt range.

At present, with an accelerating voltage of 5,000, the "red" and "blue" grid potential difference is about 15,000 volts. If the accelerating voltages were upped to 50,000, that grid potential would have to be increased to 150,000. Obvious problems, possible arc-over, for example, present themselves. Paramount is working on these.

The phosphors, however, will with-

stand the higher voltage needed for theatre TV, it has been definitely ascertained. These phosphors are: for red, a mixture of manganese and zinc phosphate; for blue, a mixture of calcium, magnesium and silicon oxides, with titanium; for green, zinc, silicon dioxide and manganese.

Recent TV Installations

Simplex large-screen theatre television system, manufactured by General Precision Laboratory, was installed in the Gopher Theatre, Minneapolis, in time to enable the theatre to participate in the nation-wide TV showing of Metropolitan Opera Company's *Carmen*. The Gopher seats 1,028. National Theatre Supply made the installation.

Motiograph announces recent installations of Trad Dual large-screen TV systems in theatres in Alabama, California, Florida, Georgia, Illinois, Iowa, Louisiana, Massachusetts, New Jersey, N. Carolina, Oregon, and Washington.

Theatre TV Pays, Says O'Brien

Events of the past month have definitely established theatre TV as a practical commercial proposition, RCA's J. F. O'Brien asserts in a statement to the trade press.


The success of the telecast of "Carmen" combined with the television "convention" of James Lees and Sons' carpet salesmen, demonstrate that the theatre owner's stake in TV is now "a question of hard cash to be made or passed up at the boxoffice," according to O'Brien.

Carmen was presented, at very ad-

vanced rates, by 31 theatres in 28 cities, 23 of these theatres being RCA-equipped. And 18 theatres in 17 cities staged the Lees "convention." (Lees management explains that they calculated it would cost them less to rent TV-equipped theatres during morning hours and transmission facilities, rather than pay the time and expenses of bringing in their sales people to an ordinary type convention.)

O'Brien, who is in charge of sales of all theatre equipment for the RCA Victor Division, points to the additional revenue from the advanced prices charged for *Carmen*, and to the paid use of theatre facilities for conventions during otherwise valueless hours, as evidence that theatre TV is now becoming profitable to the theatre.

French West Indies have eighteen 35-mm theatres with a total capacity of 7,150, and twenty-nine 16-mm houses with a total capacity of 9,300, the Motion Picture and Photographic Products Division of the Department of Commerce reports.



THE OPERATORS' FAVORITE!

GoldE's Automatic Enclosed Rewind Always Works! Silent, safe, U.L. approved! Eliminates fire hazard. Positive friction... can't clinch film. Tilt-back case... reels can't fly off. Microswitch safely cut-off... when door opens or film breaks, motor stops!

AT BETTER THEATRE SUPPLY DEALERS
GOLDE MANUFACTURING COMPANY
DEPT. IP. 4888 N. CLARK ST. • CHICAGO 40, ILL.

What's new at 

for THEATRE OWNERS?

THE NEW

CINERAMA

 **PROJECTORS**

CENTURY scores again... for CENTURY PROJECTORS are the choice when performance demands the best.

CENTURY projection is the choice for CINERAMA—the new "3rd dimensional" motion picture.

Steadier pictures—Cooler operations—Less film distortion—Better projection.

For theatres or drive-ins; large or small, use CENTURY PROJECTION & SOUND for your own and customer satisfaction.

See your CENTURY dealer or write:

CENTURY PROJECTOR CORPORATION
729 Seventh Ave., New York, N. Y.

PERSONAL NOTES

E. A. DICKINSON of Westrex Corporation's New York office traveled to Johannesburg, South Africa, to supervise the installation of Westrex recording equipment in the studios of Alexander Films.

HOWARD WILSON is new Midwest district manager for Radiant Manufacturing Corporation, maker of projection screens. Wilson is a former football and track star of Illinois State College, where he studied Audio-Visual methods of education.

M. F. (MARTY) BENNETT has been promoted by RCA from the post of manager of theatre equipment sales in the Engineering Products Department to membership in RCA Victor's regional management staff. The promotion was announced by A. R. HOPKINS, general sales manager of the Engineering Products Department.

C. L. A. WYND has been named assistant general manager of the Eastman Kodak Com-

pany's Kodak Park Works, sharing rank and responsibility with GEROULD T. LANE. I. N. HULTWAN, Kodak vice-president, announced the appointment.

A. JOHN (JACK) PLATT has been made manager of theatre equipment sales for RCA Victor, succeeding MARTY BENNETT, who has been advanced. Platt was formerly with RCA Service Company, resigned in 1948 to join Midwest Theatre Supply of Cincinnati, re-joined RCA in 1949 as theatre sales representative.

Recent changes at Eastman's Kodak Park Works include appointment of DR. LOUIS K. EILERS to be administrative assistant to the general manager; DR. AUSTIN J. GOULD to be assistant manager of film manufacture; EUGENE R. CLEARMAN to become superintendent of roll coating and E. PHILIP KRON as purchasing engineer.

ARTHUR J. HAMMER is the new RCA Victor regional manager in the Southwest, with headquarters in Dallas, Tex., succeeding JAMES W. COOKE, retired.

23) the commercial application of magnetic sound to 8-mm motion picture prints.

Stereoprojection

The year did not close without public, commercial presentation—highly profitable, too—of a full-length motion picture feature in three dimensions, based on the polaroid-spectacle principle. Details of this process are fully reported elsewhere in this issue, and need not be reviewed here. It should be added, however, that the initial box-office response in California, where the first showing was held, was such that arrangements were made forthwith for added showings in other parts of the country. As these lines are set down, the last week of December, technicians are busily installing Natural Vision equipment in a Dallas theatre.

Further, a number of individuals

1952: WONDER YEAR

(Continued from page 12)

theatres (page 27). As a commercial proposition Synchro-screen itself dates back to 1951. Its claimed advantages and alleged drawbacks were vigorously debated in IP for January, page 16; February, page 18, e.g.

Synchro-screens were designed essentially for smaller-size theatres. Some rather large houses, however, also installed them and they subsequently were re-designed for theatres of every size. December's IP, page 27, reports an installation of Synchro-screen in the 3,100-seat RKO 58th Street Theatre in New York City, which won the approval of circuit exhibitors present to the extent that they instantly placed orders for their own theatres.

December's IP also reported a new optical recorder with no mechanically moving components (page 18), that may possibly prove an important factor in the current contest between magnetic and optical recording, and thus influence the ultimate nature of projection room reproducing equipment.

The same issue also reported (page

SPICES NOT HOLDING?

Film breaks are costly.
Play safe by using

JEFRONA

All-purpose CEMENT

Has greater adhesive
qualities. Don't take
our word for it. Send
for FREE sample and
judge for yourself.

CAMERA EQUIPMENT CO.

1600 Broadway

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CLAYTON BALL-BEARING EVEN TENSION TAKE-UPS

For all projectors and sound equipments

All take-ups wind film on 2, 4 and 5 inch hub reels.

Silent Chain Drives

THE CLAYTON REWINDER

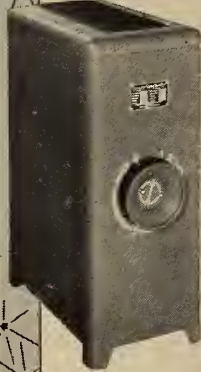
For perfect rewinding on 2000-foot reels.

CLAYTON PRODUCTS CO.

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WHY *Strong* RECTIFIERS ARE PREFERRED



The only rectifiers especially designed, manufactured and tested in one plant together with and for use with motion picture projection arc lamps. This is highly important, as efficient operation of each type and rating of arc necessitates a rectifier specifically engineered to its particular requirements.

There is a dependable Strong Rectifier for every type projection lamp:
2-Tube - 4-Tube - 6-Tube
Single and Three Phase
Models for

- Rotating Feed Angular Trim High Intensity
- Copper Coated Coaxial High Intensity
- 1 K.W. High Intensity
- Low Intensity

All assure smooth output current, long life, low operating temperature, and flexibility in control.

*Write for
Free Literature*

THE STRONG ELECTRIC CORP.

City Park Ave.

Toledo 2, Ohio

PROJECTION LAMPS • SLIDE PROJECTORS
SPOTLIGHTS • RECTIFIERS • REFLECTORS

Invest In

U.S. DEFENSE BONDS

Now Even Better

thoroughly and intimately familiar with show business, and whose judgment most showmen would be inclined to trust, have told IP that the Natural Vision process can, in their opinion, do better than it did in the California performances—even though that showing was eminently impressive at the box-office. These persons say that the Natural Vision process did not enjoy its full advantage with the film *Bwana Devil*, but was handicapped by the nature of the story.

"If they had had a better picture," one of these competent observers opined, "third-dimension would have been in. The whole industry would have turned to it." Whether or not this judgment is truly valid will be known before too long.

A Great Year

To recap, 1952 has had no parallel in the history of the industry. As mirrored in IP's pages, the past year comprised these developments:

Heat-transmitting, light-reflecting mirror.

Magnetic soundtracks on projection prints (16-mm and 8-mm only thus far).

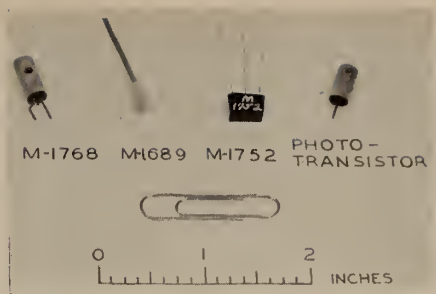
Consistent TV transmission for long distances beyond the horizon, speeding up the day when no theatre will be too remotely located to be linked into the nets.

Eidophor full-color, arc-illuminated large-screen TV accompanied by stereo-sound.

Cinerama: panoramic cinema accompanied by magnetic-track stereosound of amazingly perfect quality.

Large-screen TV in a drive-in theatre; plus \$8,000-per-theatre average gross per evening for a TV boxing program.

Transistors, probable successors to



Transistors, including photo-transistor at right, perform the same work as vacuum tubes while requiring in some cases as little as 1/1,000,000 as much power. This economy in power results from the fact that transistors need no high-temperature cathode, making heater or "A" current unnecessary.

vacuum tubes, going into commercial operation, and demonstrated, for the first time, in a variety of commercial proto-products.

Synchro-screen for large theatres.

Optical recorder with no moving parts.

Successful commercial three-dimensional full length feature utilizing polaroid spectacles.

All in one year! There has never been a year like it for the motion picture industry.

THEATRE SOUND REPRODUCERS

(Continued from page 17)

of his films José Iturbi actually struck the lowest "A" on the piano, and that we heard it clearly and loudly. Does this mean that our sound-system is capable of reproducing a sound of 26.667 cps? The answer, strangely, is—no, not necessarily. All that we heard, when that lowest "A" was sounded, were the 4 or 5 "A's" above it, fading in and fading out 26.667 times every second. Our system reproduced the "A's" whose frequencies are 53.333, 106.667, 213.333, 426.667 cps. at a periodicity of 26.667 cps. Whether it reproduced the actual fundamental or not is of little consequence, since in piano tone-quality the fundamental is very weak in the lower tones.

Recorded organ music is likely to be disappointing simply because the organ has a vast range of pure tones, in addition to tones rich in harmonics, and this range exceeds the power of present-day recording and reproducing systems.

Harmonics and Fundamentals

Harmonics—"overtones" which are in harmonic relationship to the fundamental, pitch-determining tone—impart to sounds their characteristic quality, or timbre. Lack of them results in a deep, hum-like tone. A few very high overtones produce flute-like and bell-like tones; while several loud overtones in the first few octaves above the fundamental result in warm,

reedy, violin-like tones. The characteristic tones of all instruments can be imitated by electrically combining the various pure tones which go to make up the fundamental and harmonics of a compound tone. This is actually done in the electric organ.

The problem of reproducing human voices in perfect naturalness is primarily a problem of reproducing the complex patterns of overtones, since the fundamental tones of voices are weak. These fundamentals do exist; they range in frequency from 100 to 200 cps in the case of male voices, and from 180 to 300 cps in the case of female voices. Arti-

SAVE

\$400

A YEAR ON CARBONS

THE CRON-O-MATIC

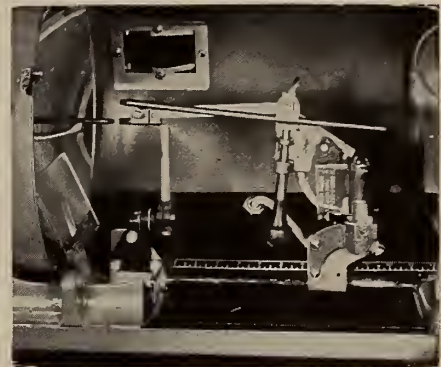
Fully Automatic

CARBON SAVER

for Ashcraft "D" and "E", Brenkert-Enarc, Peerless Magnarc and Strong Mogul lamps.

Burning average lengths (3¼") down to ¾" saves 2½" or 22.2% of the carbon cost.

Uses positive carbon stubs of any length, without preparation. When entirely consumed, the new carbon goes into use without losing the light, or otherwise affecting lamp operation.



No more "Will it burn a full reel" guessing.

Only \$52.50

If your dealer can't supply you, order direct.

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() Send literature on the Cron-O-Matic

() Ship Cron-O-Matic Carbon Saver:

() C. O. D., including postage

() Remittance herewith.

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Theatre _____

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EXPORT: Frazar & Hansen, Ltd.

San Francisco, New York, Los Angeles

A Good Film Cement makes a Good Splice

... Use Ethyloid and you use the Best!

ETHYLOID

Available at all Theatre Supply Dealers—in every state in the Union

FISHER MANUFACTURING CO., 1 SALTER PL. Manufacturing Chemists, Rochester 13, N.Y.

Free Test Sample If You Wish

Make Your Next Film Cement Order

ETHYLOID

You'll Be Glad You Did!

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N. Y.

culation, however, depends on overtones which may extend up to 3,000 or 4,000 cps.

The strengths of the various overtones imparts to each person's voice a characteristic timbre which permits us to recognize our acquaintances merely by hearing them speak. The sounds which go to produce words are formed by modifying the relative strengths of the overtones during the act of speaking.

Types of Phono Pickups

The Phonograph pickup is a microphone modified in such a way that it generates currents in accordance with the movements of a needle which tracks the record-groove. The first phonographs were non-electric; and the needle imparted its movements to a diaphragm which set up pressure waves in the air, amplified only weakly by a horn.

The movement of the needle may be vertical (as in reproducers intended for playing the old Edison "hill-and-dale" records) or lateral. All modern records are lateral-cut, that is, the groove maintains a constant depth, but varies its position from side to side, thus imparting a horizontal vibration to the pickup stylus.

There are several types of electrical pickup in use. The magnetic pickup was once the most common type, but it has now been supplanted by the crystal pickup. The condenser pickup differs from both of these in that it produces variations in the strength of a constant DC bias voltage applied to its plates. Magnetic and crystal pickups are electric generators, and require no bias voltage.

Old-fashioned magnetic pickups are still used in many theatres for playing overture music even though they are so heavy that they "track" poorly and wear records very rapidly. They are, in fact, so heavy that only steel needles can be used in them. This makes the magnetic pickup a nuisance to the projectionist, who must change the needle after every one or two records in order to avoid distorted sound and undue record-wear.

The Magnetic Reproducer

The magnetic pickup is a *low-impedance* alternating-current generator. The simple armature coil, positioned between the poles of a powerful permanent magnet, is caused to vibrate by the phonograph needle fastened to it through a mechanical coupling device. Since at each vibration the armature-coil cuts through magnetic lines of force, a tiny pulse of current is generated, and appears as voltage at the output terminals of the device. The two leads are connected to the primary winding of a simple step-up transformer, which is usually located in the amplifier. The output of this "impedance-matching" transformer

is fed directly to the grid of a voltage-gain tube in the amplifier, ordinarily through a volume-control potentiometer. Fig. 1 illustrates this hook-up.

As a general rule, pickup and grid-circuit impedances must be made equal in order to obtain a maximum transfer of power and a minimum of sound distortion. Since the impedance of a magnetic pickup is only a few hundred ohms, and that of the input circuit several thousand to several million ohms, the matching transformer must have hundreds of turns of wire in its secondary winding for every single turn in its primary.

The idea is exactly the same as that involved in the speaker impedance-matching transformer to which the output of an amplifier is connected, but with this difference: the output transformer steps the impedance down from the several thousand ohms impedance of the power-tube plate circuit to the 15 or 20 ohms impedance of the speaker voice coils.

As stated before, steel phonograph needles only should be used in heavy magnetic pickups. Many projectionists, in an attempt to avoid the necessity of frequent needle-changing, have made the mistake of using 1000-play osmiridium and 5,000-10,000-play sapphire needles in these pickups. Magnetic pickups are just too heavy for "semi-permanent" styluses. Not only will the needles themselves wear out in short order—and they are expensive!—but the records will be ruined. A single play with the wrong kind of stylus will cover the disk with a fine black powder chiselled from the

grooves. The record is thereafter unfit for playing again.

In order to decrease the terrific needle-pressure on the record, the "tone-arms" of magnetic pickups are usually counter-balanced. This expedient, however, increases the mechanical inertia of the assembly to such an extent that the pickup will bounce on warped records, skipping grooves, or repeating on a single turn of the groove until someone gives it a gentle push toward the center of the record. Needless to say, a record too badly warped for satisfactory playing with a magnetic pickup is likely to be severely gouged by the needle.

This same inertia of the heavy magnetic pickup, however, is an advantage when it comes to reproducing low frequencies of recorded sound without distortion or mechanical intermodulation. The needle does all the vibrating because the pickup itself is too heavy and inert to shake on the bass tones.

Magnetic pickups may be used for playing both 78 rpm and 33 1/3 rpm *standard-groove* records, but *never* for playing the new 45 rpm and "Long-Playing" 33 1/3 rpm *microgroove* records! These newer records require lightweight pickups of high sensitivity and specially shaped jewel-point needles.

In view of the many undesirable features of magnetic pickups—the need for matching transformers being one of them (although many old-style amplifiers had built-in input transformers)—many projectionists have discarded them for modern crystal pickups.

[TO BE CONTINUED]

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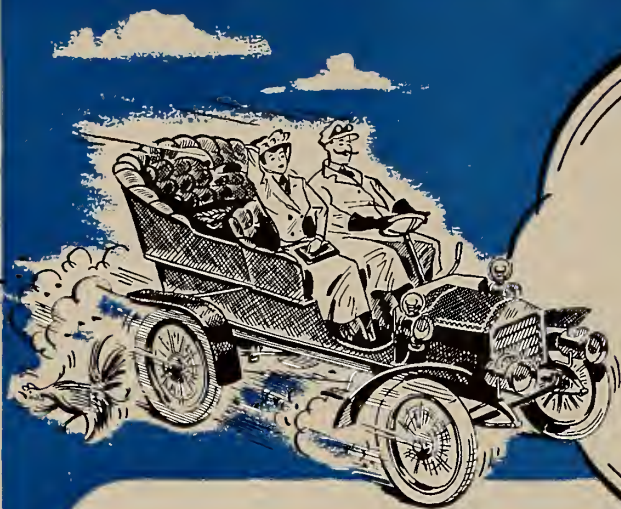
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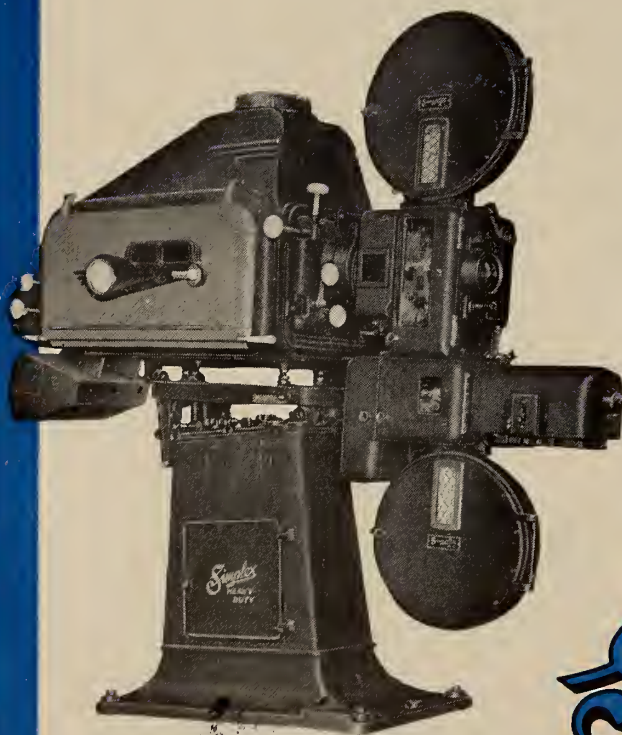
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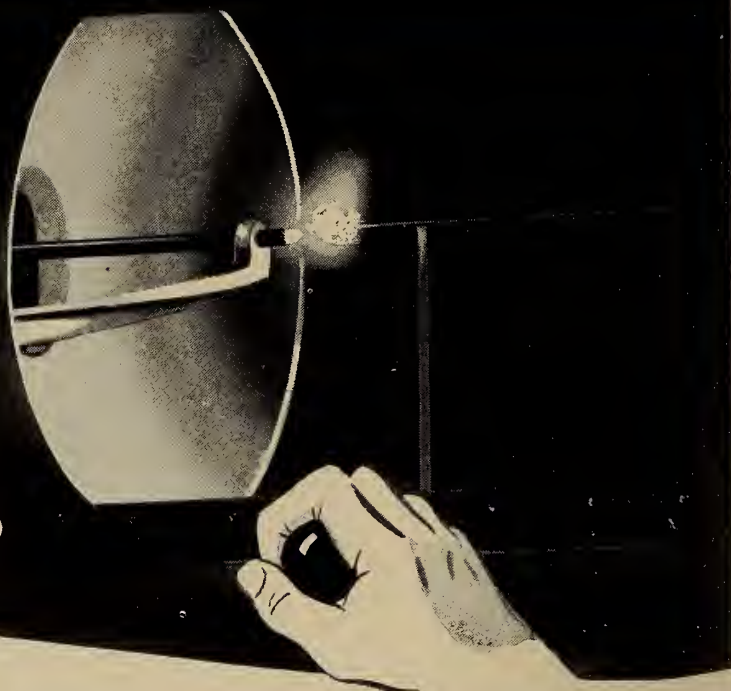
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INTERNATIONAL PROJECTIONIST

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JAMES J. FINN, *Editor*

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FEBRUARY 1953

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MONTHLY CHAT

THE motion picture industry currently may be likened to the man who doesn't know quite where he is going but is in one hell of a hurry to get there. The reason for this indecision is, of course, the feverish activity anent 3-D films and other processes.

The use of italics in the last phrase was deliberate, because we think it time that a few misconceptions about the various processes be dispelled. Over the past few years IP has described in detail all of those developments which now are being ballyhooed as "innovations"; and IP reiterates the view expressed in this column on numerous occasions—that all these technical "advances" which now have the industry jumping were easily possible of achievement at any time during the past ten years.

Let's have a quick rundown of the present situation. First, there are true 3-D films and then there are the *other processes*. Affixing the phrase "illusion (or suggestion) of depth" to a process doesn't mean a thing: we've had a "suggestion" of depth in hundreds of pictures over the years.

Neither Cinerama nor the recently announced Cinemascope of 20th-Fox is, to our mind, a 3-D process. Both are merely systems which provide a huge picture and enhanced sound effects. True, with Cinerama one has the impression of being surrounded pictorially and aurally. But it should be noted that the Cinerama show is *all* spectacle; it certainly is not drama. We get the impression that only about 25% of the seats in a Cinerama theatre are top-notch for viewing.

20th-Fox has not yet publicly shown its Cinemascope process, but we gather from the data which they have released that it is simply another big-screen system. Cinemascope has the *economic* advantage of requiring only one camera and one projector, but we have strong doubts that this fact will turn out to be an unmixed blessing, particularly on the exhibition end.

We are firmly convinced that we're not ready yet for a 50- or 60-foot screen. Even if our eyes were able to comfortably encompass such a visual sweep (and IP says "no" to this), we can't see any rhyme or reason for such a size. Joe Doakes talking with Jim Smith, or the perennial boy-and-girl situation, would be nothing short of ludicrous on such a screen. After all, we've had the Magnascope screen for many years, but it was always used for *spectacle*, not drama.

Even if such a large screen were desirable, we just can't get away with it on the projection end for the simple reason that we do not have available the proper light source or the optics. 20th-Fox states that it will use a single projector having a wide-angle lens for projecting Cinemascope pictures. Well, we have yet to see a lens that will do this job and still retain the picture quality we must have; nor are we aware that any American lens manu-

(Continued on page 34)

STRONG IS READY WITH 3-D PROJECTION LIGHTING

Strong now offers equipment designed especially for the requirements of 3-dimension projection.

TWO PROJECTORS RUN SIMULTANEOUSLY

Most of the many new systems of third-dimension picture projection call for simultaneous operation of two or more projectors and projection arc lamps.

FILTERS—SPECTACLES—LARGER SCREENS

A 50% light loss at the screen resulting from the use of polaroid filters, further light loss to the viewer occasioned by the use of polaroid spectacles, and the increase in screen size which is necessary to overcome the illusion of the projected image being smaller than the actual size of the screen, combine to necessitate an increase in the brilliancy of the existing projection lighting.

LARGER REELS SOLVE CHANGEOVER PROBLEM

Since both projectors run simultaneously, the conventional changeover is impossible unless four or more projectors were used. To make this duplication of equipment unnecessary, reel sizes have been increased to accommodate up to 5000 feet, so that ordinarily only one intermission is necessary.

LAMPS MUST BURN LONGER

This increase in reel size demands lamphouses with a burning time of at least 58 minutes to permit the 50-minute running time without retrimming, the 2-minute burning-in time and a 10% safety factor.

TWO LAMPS—IDENTICAL CHARACTERISTICS

Since each eye sees only one of the two projected images, it is obvious that the intensity and color value of the projected light from both projectors be absolutely identical. Furthermore, the extended burning time required by three-dimensional film makes an automatic means of arc positioning control absolutely essential to obtaining a screen light that is constant in brilliancy and color without the necessity of frequent manual adjustments of the controls.

NEW PROJECTION ARCS REQUIRED

Inasmuch as most arc lamps in present use were designed for projecting only two 20-minute reels without retrimming and usually with a brilliancy not up to 3-D requirements, they obviously cannot be used with this new medium. Since projection arc lamps which deliver this new high in light intensity automatically consume carbons at a faster rate, provision had to be made for a carbon trim which was ample for the extended running time.

Accordingly, there has been created a demand for projection arc lamps which deliver an increased volume of light, for an extended burning time and with light characteristics identical in every instance. All of these requirements have been met in

THE NEW STRONG 90,000-8 (3-D) PROJECTION ARC LAMP

This lamp accommodates a 20-inch trim of carbons which will burn continuously for a full hour at 78 amperes (using 9mm positive and 5/16" negative) or at 95 amperes (using 10mm positive and 11/32" negative).

LIGHTRONIC CRATER POSITIONING

The position of the positive arc crater in the Strong 90,000-8 (3-D) is automatically maintained at the exact focal point of the reflector by means of the exclusive Lightronic crater positioning system. The positive and negative carbons are advanced by separate motors, the speeds of which are governed by the Bi-metal Lightronic Tube. Once the arc has been struck, the crater positioning and the gap length are automatically maintained without manual adjustment. A stream of air directed just above the arc stabilizes its burning.

The optical system comprises an elliptical reflector 16½" in diameter with a resultant speed of f1.9 to match the currently available high speed f1.9 projection lens. The mirror and its tilting mechanism are an integral part of the back door of the lamphouse, which swings out to allow easy cleaning of the reflector and convenient trimming of the lamp.

The Strong 90,000-8 (3-D) features unit construction whereby the various components are instantly removable for cleaning and inspection.

NEW POWER SUPPLIES REQUIRED

In no case will the present power supply equipment, designed to operate only one lamp on 20-minute cycles with 5-minute changeover periods, meet the needs of the condition where two projectors and two arc lamps are running simultaneously and for extended periods of time. Hence new power supply equipment is needed—equipment which permits long periods of continuous operation. Such equipment has been designed by Strong and is now available for delivery in

THE NEW STRONG 95008 (3-D) 75-85 AMPERE 3-PHASE 220-VOLT TUBE-TYPE RECTIFIERS

with automatic fan air cooling for efficient operation with the new Strong 90,000-8 (3-D) projection arc lamps.

Transformer taps provide adjustment to compensate for supply voltage variations through a range of 10% above or 10% below the rated A.C. input voltage throughout the output rating range.

The complete electrical and mechanical assembly consists of three transformers, six tube sockets, and manually operated output control handle which actuates the 8-point rotary switches that are employed to increase or decrease the output power even when the arc is burning.

The rectifier is built in single lamp units to provide maximum flexibility in electrical connection.

Higher power 3-D rectifiers for use with lamps burning 10mm carbons are also in production and will be available for early delivery.

For further details on the subject of arc lighting as it applies to the projection of three-dimensional pictures by any system, address your request to

Department 3-D

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Three-D Projection: Progress Report

By MERLE CHAMBERLIN

Director of Projection, M-G-M Studios, Culver City, California

The second in a series of articles on three-dimensional motion pictures which assays the progress made to date in projection equipment and procedure which will lend maximum effectiveness to the presentation of this new visual medium.

IN IP last month* the writer ventured the opinion that projectionists were in for a New Deal in projection. This opinion was predicated on the assumption that box-office jingle resulting from the cash customers attracted by "Bwana Devil" would start the industry thinking—and acting.

Well, as if "Bwana Devil" weren't enough, along came Sol Lesser with five shorts which he is exhibiting around the U. S. A. under the heading of the "Tri-Optican" or "Stereo-Techniques". This is the English Spottiswoode process which basically follows the procedure of our previously described Natural Vision (N-V) process which was used for "Bwana Devil." projector filters and Polaroid viewing glasses are the same. The only deviation in procedure of these two systems is the fact that in photographing his short subjects, Spottiswoode utilizes "convergence" for special effects. This term, as it affects the projectionists, will be more fully explained subsequently.

The Tri-Optican exhibitions followed

the same pattern as their predecessor. The cash customers are flocking to the box-office, they are not objecting to wearing glasses, they are not objecting to the intermissions, and, for the same reason explained in the "Bwana Devil" article (automatic concession break), the exhibitors are not objecting to the intermissions or anything else.

Dizzy Pace Being Set

We should expect that the natural result of all this would be an upbeat in activity along 3rd-dimension lines in Hollywood. Our expectations are being realized to the full. Hollywood is a veritable beehive of stereoscopic activity. The writer is going to attempt to keep you up to date, stereoscopically speaking, in this and subsequent articles. The only deterrent in this attempt will be the speed with which progress is being made. Our monthly reports in IP will try to keep our readers abreast of current developments. One month is a long period of time when measured by the rapidity of technical changes in Hollywood at present.

At least two of the major producers have signed to do a show using the

N-V process. One of the pictures, Warner Bros.' "Wax Works" is in actual shooting status. All of the other majors and most of the independents are experimenting feverishly with various modifications of the Polaroid (analyzer) system. This means that all processes so far are to be dependent on the simultaneous projection of two films. Tests are rolling on every lot with a myriad of variations of the photographic process. In other words, we are in it—3-D is here—and if it is to provide that needed shot-in-the-arm to the box-office, let us as projectionists exert our *very best* efforts.

Projectionist a Prime Cog

In view of the foregoing, we should examine the situation as it specifically pertains to us projectionists. The importance of the projectionist in this impending technical revolution cannot be over-emphasized. That others share this opinion is borne out by the fact that on January 22 of this year the writer attended a three-hour technical meeting of the Motion Picture Research Council which was devoted exclusively to "Stereo Motion Picture Projection Problems."

Subsequently we will discuss these problems in terms of comments, explanations, and solutions. Some of these comments may seem at variance with previously published data. These apparent contradictions can be charged to the speed with which the process is

*"Natural Vision—Another Step in the Right Direction," January, 1953, p. 5.

developing as well as to the fact that the writer is basing his theories on many years as a theatre projectionist, chief projectionist of a circuit, studio projectionist, studio process (rear projection) projectionist and, for the past 15 years, supervisor of projection for M-G-M studios.

Let's analyze the projection of dual-film N-V through its various steps from the screen to every item in the projection room that affects our presentation of a Polaroid (analyzer) picture:

Projection Screen Data

A. THE SCREEN: A matte-surface normal projection screen will depolarize our picture; in other words, the "depth" effect for which we are striving will be lost. This leaves us with the fact that we must have a metallized surface on our screen. Aluminizing is preferred because of the very low deviation (approx. 10%) in the normal color spectrum reproduction that is realized from this surface.

We all are familiar with the fact that a screen with a metallized surface will be semi-directional, thereby resulting in added reflectivity. This will give us a slight gain in illumination at the screen. The writer has confined his tests to the Walker HI-intensity screen. These tests have indicated (for light loss-gain computations) a 1.70 gain in picture brightness.

B. VIEWERS: Each person viewing the picture must wear Polaroid spectacles. The first ones that made their appearance were plastic lenses in paper frames. These are given to the patron and then forgotten. In most cities it would be a violation of health laws to reissue these spectacles.

New Improved Viewers

As the screening multiplied, a better viewer made its appearance. We have seen both glass and plastic lenses

mounted in plastic frames. These are much better looking spectacles and, theoretically, may be sterilized. After use they are run through a sterilizer which is much the same as a barber uses to electrically sterilize a razor. Whether or not this procedure will prove practical remains to be seen.

These viewers provide correct polarization for the right and the left eye. The right eye sees only that image which is projected leftward by the right-hand projector, and the left eye is similarly restricted to the left-hand picture. Light transmission of these viewers has been determined to be in the neighborhood of 0.8.

Filter Placement Vital

C. PROJECTOR FILTERS: A Polaroid filter must be provided for each projector. These filters perform the same function for the projectors as the viewing spectacles do for the audience—they separate the two pictures, one filter for the right projector and its opposite for the left projector.

Filters now in use are made of gelatin and are hung in front of the projector portholes. They must be level and must be placed in only one position perpendicular to the projector lens. This has presented a problem inasmuch as too many factors (mounting, air currents, etc.) can affect the permanence of the placement of these filters.

Glass Filter Experiments

Experiments are now being conducted to determine the practicability of mounting glass filters on the front of the projector lens. Stops will be provided and placement will be governed by guides on the lens mounts. Guides cannot be placed on the lens barrels due to the fact that there is too much danger of a lens being turned when replaced after removal for cleaning. Polarizing filters must not be rotated. Light transmission of present projector

filters has been approximated at 0.5.

Screen Brightness Problem

D. PICTURE BRIGHTNESS: This item has been placed in sequence here because to determine where we stand on illumination intensity, we use the data obtained from items A, B and C. Assuming that we started out with a matte surface screen in *good* condition, we had what could be termed 100% picture brightness. To determine what we have left we take our screen gain (1.70) X our viewer transmission (0.8) X our projector filter transmission (0.5) and discover that, mathematically, we end up with only 58% of our original screen brightness as a result of using the necessary elements of a Polaroid projection system.

Mathematically this is the case. Visually we have our doubts. We are still looking at one picture (one eye at a time) but the effect is as though we were *not* experiencing the excessive brightness loss that is indicated by our computations. We do, however, experience a feeling of dullness—the "snap" is gone. This means that we must utilize every possible means to increase our screen brightness. So, right here let us find out what can be done to increase that screen illumination.

Every item in the light path is important. Our screen has been taken care of. The next light loss potential (working in reverse) is the portholes. Is the glass itself any good? Or is it glass suitable only for ordinary windows? Maybe it is a replacement from the local hardware store when the original glass was broken.

In any event, our *via* ports light loss can be anywhere from 7% to 15% depending entirely on the quality of the glass. In testing port glass the writer has realized fine results when specifying "optical plate selected for parallelism."

Light Transmission Units

The next item to check is our shutter(s). Maybe we have one in front, one at the cooling plate, or both. All we have to cover with that master blade is the pull-down of the picture, so in most cases we can open up a bit for a nice light gain. Naturally, if we go too far we're going to have travel-ghost trouble which won't help a bit. It takes a solid 85° of the 360° shutter to completely cover our film pull-down, so let's try

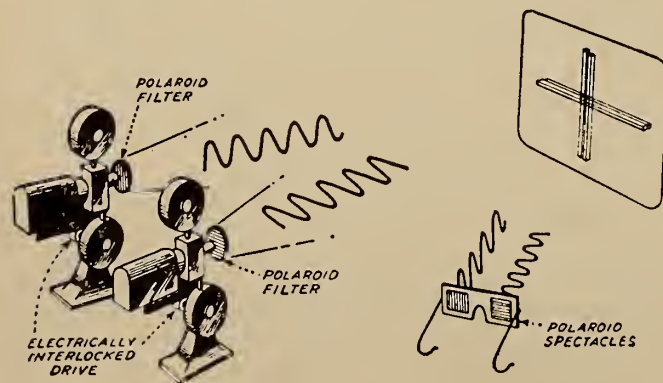


Diagram of a typical double projector installation using Polaroid filters on the projectors, plus viewing spectacles and projector interlock.

"Light housekeeping . . . a necessity"

Obvious to everyone may be the fact that not enough light is getting to the screen; or that the sound system is not functioning properly. The reasons, however, may be varied—equipment failure, inadequate house-keeping, or a drop in power output. Aid in this type of trouble-shooting may be obtained from the Eastman Technical Service for Motion Picture Film which Kodak maintains at strategic centers to cooperate with producers, processors, and exchanges and exhibitors.



Address:

Motion Picture Film Department

EASTMAN KODAK COMPANY, Rochester 4, N. Y.

East Coast Division
342 Madison Avenue
New York 17, N. Y.

Midwest Division
137 North Wabash Avenue
Chicago 2, Illinois

West Coast Division
6706 Santa Monica Blvd.
Hollywood 38, California

and keep those master blades at 85°+. We now take a look at our lens. Are they the new half-size (2 11/32") coated jobs? If so, we can't accomplish much in that direction. If they are half-size but uncoated, let's hop up the light by getting a pair of loaners and get ours polished and coated. If our lens turns out to be the quarter-size gems that were thrown in with the linoleum when the theatre was built, let's really hit the light jackpot by buying some new ones.

Now for the light source itself. Are we operating our present lamps at a respectable level in respect to the picture size? Are we practicing false economy by using smaller trims than we should to show a \$50 per year book-saving on carbons? Are the results realized from our antiquated lamps behind the photographic and print quality of today's motion picture? Are our condensers or mirrors pitted beyond all hope of performing the function for which they were intended? If any or all of these four questions can be answered in the affirmative, the remedy is elementary.

Arc lamps, Power Source

After all these matters are corrected, we must still look to our lamps and power for an increase in illumination. If our power source (be it generator or rectifiers) possesses sufficient capacity, we should be able to install a larger trim and increase our amperage. We can always realize a gain by reducing our resistance by cooling our carbons.

To date, water has been the most efficient agent for cooling carbons. M-G-M, has used water cooling on higher amperage projection arcs since 1932. A consistently brighter and cleaner picture (particularly for background projection) has been the result. Arc Kits that embody the water-cooling principle can be obtained for any Super-X or Hi-Intensity type projection lamp.** If we are really flush, one manufacturer is marketing a new lamp with the entire water system an integral part of his equipment.

When contemplating any increase in load on our power facilities, we must bear in mind that fact that when projecting the 2-film (N-V) show *both* lamps will be burning at the same time. Our lamp supply facilities must be able to carry that load for extended

periods up to one hour. In cases where present facilities will not handle that load, we must obtain another generator or, as the case may be, a rectifier to handle the increase in load.

Now, then, with all requisites as outlined previously herein having been observed (precise optical alignment being a *must* and all corrections and modifications having been made) our light source should be adequate.

Interlock for Perfect Sync

E. INTERLOCK: Until such time as someone announces a two-headed projector (double movement, lens, etc.) we are going to have to depend on the interlocking of two projectors for the projection of 2-film, 3rd dimension. This is so that the two pictures can be projected in perfect synchronization frame for frame. Separate copies of the same picture are viewed by the right and left eye, but those corresponding copies must be seen at the same instance. A rather weird effect is accomplished by putting those pictures as little as *one frame* out of sync. This means that we must provide a *positive* interlock for our projectors.

The situation in this respect reminds us of the growing pains that came with the advent of sound. Remember? A

'Abundant Practical Data'

"We enjoyed so much the article, 'Natural Vision—Another Step in the Right Direction,' by Merle Chamberlain in the January issue of your magazine.

"The broad explanation of third dimension as covered by this article—and the technical details of Natural Vision immediately following—is perhaps the most useful and timely bit of information concerning third dimension we have ever seen. There is no doubt but that the industry is once again in a most important period of transition, and this article contains an abundance of worthwhile practical information needed by everyone.

"Every projectionist not already a subscriber to IP should immediately become one so that he may know more of the technical aspects of third dimension projection, and in the many other helpful technical articles concerning his profession which you publish consistently.

"Please accept our thanks for your permission to reprint the article, and for making available to us and the industry this much needed and important technical information."

ALLEN G. SMITH
National Theatre Supply Co., New York.

new sound system was announced every month.

The first commercial theatre presentation of 2-film, 3rd dimension was on November 26, 1952. It is now three months later and the writer knows of *nine* interlock systems already on the market. We have our choice. All we can do is hope we select the right system.

The prime requisite is a *positive* interlock. Our machines must start together, finish together and never float apart as much as one sprocket hole during the entire screening. Ease of positive alignment, simplicity of installation, flexibility of programming, and safety for the projectionist all can be sacrificed in the interest of original purchase price if reliability of interlock is positively determined.

Types of Interlocks

Types of interlock systems available at the moment range from a flexible shaft job for less than \$200 to a heavy-duty, 3-phase electrical installation for about \$900. If *any* interlock is purchased, be sure that all exposed moving gears, chains, shafts, etc., are properly equipped with guards. If not provided, have them made or make adequate guards yourself.

Serious and permanent injury can result in getting tangled up in any interlock equipment. Experience has proven that a 3-phase electrical interlock is the most reliable and dependable type. The writer is referring to the "driver-slave" system that is simple to install, positive in alignment, and does not require a major equipment relocation in the projection room. This type differs from some of the electrical systems on the market in that alignment is positive and foolproof. In any event, insist on a positive and *permanent* interlock when purchasing either a mechanical or electrical kit.

In conjunction with the interlock, it might be well to mention here that, as well as keeping our pictures in sync, we must also keep them aligned horizontally and vertically. The two projectors must be superimposed before each show. This is done with the chart provided. Horizontal and vertical lines must appear as one of each when both mechanisms are projecting the chart. Once set, the vertical lines have to ride along pretty much as is throughout the show. The horizontal lines can be checked and trimmed with the framing
(Continued on page 27)

**Huff's Hydro-mag water coolers.

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"THERE'S A BRANCH NEAR YOU"

Carbon Arc Gases, Dust: Addendum

By JAMES J. FINN

EVERY few years there appears in the literature an item which sets off a flurry of comment on a topic that has long engaged the attention of serious thinkers in the medical, industrial and Labor Union fields — the concentration within a given area of dusts or gases, or both, from the combustion of the carbon arc and their effect upon motion picture projectionists who daily operate such arcs.

Such an item appeared in the "Spot-light" department of IP for December last (p. 20), reading as follows:

"If your Local has any record of a member having contracted silicosis or berylliosis as a result of breathing carbon dust or gases, Frank W. Costello, secretary-treasurer of Local 162, San Francisco, would appreciate full details. Local 162 is attempting to collect compensation for a member who has been hospitalized; but under California laws it is necessary to prove direct connection between the disease and occupational conditions."

Neither Secretary Costello nor anybody else interested in this topic need harbor the feeling that they are running up a blind alley, because the literature is replete with precise data bearing on the various aspects of this subject, with IP itself having contributed substantially to the sum total. A rather extensive bibliography appended hereto will serve as an accurate guide to reliable information for those who wish to pursue the matter to any great extent.

Summary of Data

A quick rundown in the form of a summary of the reliable data available to date on this topic might be helpful.

DUSTS: The chemical composition of the ash produced from the burning carbon electrodes shows that only 1.79% of the Flue Condensate is silicon dioxide, while the Lamphouse Condensate presents 1.21%. The remainder of the ash is made up principally of rare earth oxides. No beryllium enters into the composition of the projector carbons.

Drinker and Snell⁴ have shown that in the projectionist's position they found the following dust counts: 0.57, 2.90, and 16.70-millions dust particles per cubic foot. When it is considered that less than 2% of the total ash is silicon dioxide, it is readily apparent that the possible exposure to this dust is minimal and not an amount thought to be capable of producing a silicosis, for example.

The accepted limit for total dust (below 5% free silicon dioxide) is 50 million particles per cubic foot of air breathed for an 8-hour day, five days a

week, and none of these determinations of Drinker and Snell approaches this amount. This accepted limit is that adopted and termed the "threshold limit" at the meeting of the American Conference of Governmental Industrial Hygienists in Cincinnati in April, 1952.

Gas Concentration Level

GASES: The following is summarized from "Gases from Carbon Arcs and Their Effects," by A. C. Downes.¹² There is produced in the process of burning of the arc lamp, carbon dioxide and carbon monoxide, which are far below the range considered to be toxic even in the undiluted stack gases. Nitrogen dioxide was found in toxic quantities in the undiluted stack gases, but in the air of the projection room the concentration does not nearly approach what is usually considered the now generally accepted threshold limit value of 25 parts per million.

In a report of a study of 147 theatres by the Department of Health of the City of Detroit, Michigan, by W. G. Frederick, the highest average concentration of oxide of nitrogen reported was 5.2 parts per million. Further studies of the flue gases have failed to present evidence of the presence of hydrocyanic acid, cyanogen, hydrogen sulphide, acetylene, phosphine, arsine, stibine, chlorine, and other halogens. No ozone was found.

Positive Ventilation Vital

On the basis of the foregoing, it would seem that the evidence is pretty clear that there is little danger to the projectionist even with low rates of lamp-house and projection room ventilation. In fact, it would appear that if there be sufficient ventilation provided for comfortable working conditions, there cannot be any appreciable concentration of arc gases or dust in the projection room.

Attention! Roy Brewer and I. A. West Coast Studio Technicians

Decree-law No. 565 endows an Executive Commission for the Film Industry with powers to stimulate Cuban film production. This decree-law authorized the Commission to advance producers up to 33% of the production costs of a film, against subsequent repayment from receipts. In addition to helping finance production costs, this provision of the law in effect underwrites 33% of the producer's losses, should he experience losses.

The law also empowers the Commission to acquire studios and production equipment, to lease these facilities to private producers at low cost, to hire studio personnel as necessary, and to promote the

This brings us down to the one remaining important factor in the situation—adequate room ventilation. Now, what does "adequate" room ventilation mean to the writer, to Secretary Costello and thousands of other projectionists who operate carbon arcs daily—and to the hundreds of penny-pinching exhibitors who have ducked this question for years in such fashion as to make it an industry disgrace?

Well, there is a standard of projection room ventilation which was promulgated by no less an authority than the Society of Motion Picture & Television Engineers, and it was this standard that provided a powerful impetus to the drive by various alert Local Union leaders for vastly improved room ventilation.

Specific Data Required

Mr. Costello's problem, no less than that of any other interested parties, would seem to be one of tying his case to the ventilation conditions existing in the theatre where a given man works. For the convenience of the craft at large there is appended hereto important excerpts from the SMPTE report aforementioned.

It should be remembered that it is not enough that what appears to be adequate ventilation facilities have been installed. Enforcement officials have found that inspection at intervals to check on repair and proper operation is also necessary. Instances are known where ventilation fans have been operated in reverse so as to cause arc fumes to be blown back on the projectionist. Also, flues must be cleaned at frequent intervals.

Significant references to this topic over-all follow.

REFERENCES

¹ COLTMAN, R. W.: "Gases from Carbon Arcs," *Jour. Ind. Hyg. and Tox.*, XX (April, 1938), p. 289.

² COLTMAN, R. W., and MACPHERSON, H. G.: "Gases from Carbon Arcs Absence of Ozone," *Jour. Ind. Hyg. and Tox.*, XX (Sept., 1938), p. 465.

³ HENDERSON, Y., and HACCARD, H. W.: "Noxious

film industry's development in other respects with the funds at the Commission's disposal. It is understood that the Commission's operations will be financed by special drawings of the National Lottery, a source of funds already used to finance construction of the Government-owned "Film City," completed this year in the suburbs of Havana.

The Film City studios have not been put to use so far, because of lack of production equipment there, and also the hesitancy of local entrepreneurs to undertake feature-length film production in the face of the indifferent box-office returns of films previously made in Cuba.

Gases," A. C. S. Monograph (1927).

⁴ DRINKER, P., AND SNELL, J. R.: "Ventilation of Motion Picture Booths," *Jour. Ind. Hyg. and Tox.*, XX (April, 1938), p. 321.

⁵ MACQUIDDY, E. L., TOLLMAN, J. P., LATOWSKY, L. W., AND BAYLISS, M.: "Combustion Products of the Carbon Arc," *Jour. Ind. Hyg. and Tox.*, XX (April, 1938), p. 312.

⁶ MACQUIDDY, E. L., TOLLMAN, J. P., LATOWSKY, L. W., AND BAYLISS, M.: "Biological Effects of Inhalation of Carbon Arc Fumes," *Jour. Ind. Hyg. and Tox.*, XX (April, 1938), p. 297.

⁷ MACQUIDDY, E. L., TOLLMAN, J. P., LATOWSKY, L. W., AND SCHONBERGER, S.: "Tissue Reaction of Some Carbon Arc Dusts," *Jour. Ind. Hyg. and Tox.*, XXI (Dec. 1939), p. 498.

⁸ TOLLMAN, J. P., MACQUIDDY, E. L., AND LATOWSKY,

L. W.: "Acute Poisoning in Animals after Intra-peritoneal and Intratracheal Administration of Dusts," *Jour. Ind. Hyg. and Tox.*, XXI (Dec., 1939), p. 514.

⁹ MACQUIDDY, E. L., TOLLMAN, J. P., LATOWSKY, L. W., AND SCHONBERGER, S.: "Biological Effects of Filtered Arc Gases and Pure Nitrogen Oxides," (from unpublished ms.).

¹⁰ VAN WIJK, A. M., AND PATTERSON, H. S.: "The Percentage of Particles of Different Sizes Removed from Dust Laden Air by Breathing," *Jour. Ind. Hyg. and Tox.*, XXII (Jan., 1940), p. 31.

¹¹ FREDERICK, W. G.: "A Study of the Motion Picture Industry in Detroit," read before the American Conference on Occupational Disease and Industrial Hygiene, Cleveland, Ohio (1939).

¹² DOWNES, A. C.: "Gases from Carbon Arcs and Their Effects," *J. Soc. Mot. Pict. & Tv. Eng.*, XXXV (July, 1940), p. 32.

The projection room exhaust system shall be a positive mechanical exhaust system having a normal capacity of not less than 200 cubic-feet per minute and having an auxiliary emergency capacity of not less than 1000 cubic-feet per minute for operation in emergency, i.e., fire. The ventilation system shall terminate in ceiling grilles in the projection room, which shall not be less than two in number. *In no case shall this room exhaust system be connected into any of the ventilating systems of the theatre proper.*

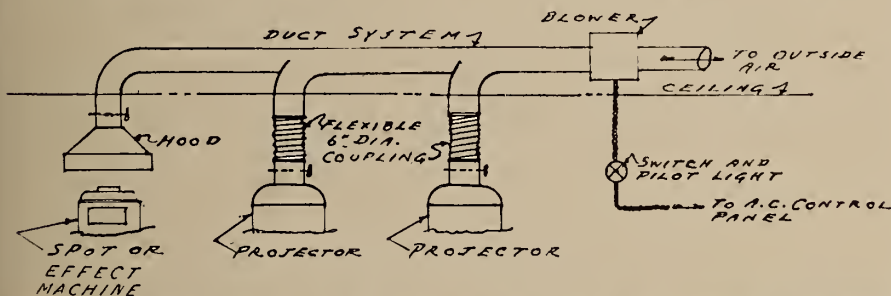
The emergency position of this fan shall be controlled by a switch (Fig. 2) operated automatically by the shutter control system, when the latter is actuated either manually or by melting of the fusible links. This exhaust fan shall be electrically connected to the emergency lighting system of the building. Control shall be provided for manual operation of this fan from a point immediately outside the projection room proper, in addition to the emergency control in the shutter system.

[NOTE: Elsewhere in the same report The Committee states emphatically that "there shall be no connection between the projection arc exhaust system and any part of the rewind ventilating system."]

Does Your Projection Room Conform?

Approved Projection Room Ventilation

AS FORMULATED BY THE PROJECTION PRACTICE COMMITTEE OF THE SMPTE



Equipment ventilation system: blower capacity 400 cu.-ft. per min.; minimum air movement through lamp houses with blower idle, 15 cu.-ft. per min.

THE projection room proper shall have the following ventilating facilities: (a) Carbon arc exhaust (b) Fresh air supply, and (c) Projection room exhaust, including an emergency exhaust.

The carbon arc exhaust system shall be a positive mechanical exhaust system independent of all other ventilating systems of the theatre. Each projector, spot-lamp, stereopticon, or floodlight machine, if of the carbon arc type, shall be connected by a flue to a common duct, which duct shall lead directly out-of-doors.

Reduction of the ventilation to each projector as required shall be accomplished by means of a local damper between the projector lamphouse and the projection room ceiling, and in addition, by means of the damper on the lamphouse proper, if such a control be provided.

This exhaust system shall be operated by an exhaust fan or blower having a capacity of not less than 50 cubic-feet of air per minute for each arc lamp connected thereto. The exhaust fan or blower shall be electrically connected to the projection room wiring system and shall be controlled by a separate switch, with pilot lamp, within the projection room proper.

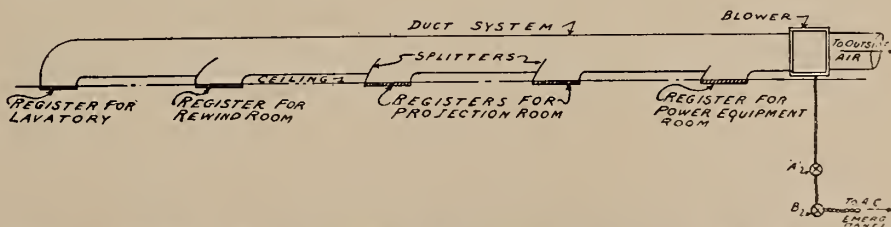
Minimum Air Circulation

There shall be at no time less than 15 cubic-feet of air per minute through each lamphouse into this exhaust sys-

tem. Fig. 1 shows the general arrangement. The ducts shall be of non-combustible material, not less than 1 inch thick.

The fresh-air supply to the projection room shall consist of not less than two intake ducts located at or near the floor and at opposite ends of the room, and shall be connected into the main air-supply ducts of the building. *There shall be no connection between this air-supply system and any of the exhaust systems of the projection room.*

It is recommended that gravity-operated dampers connected to the emergency porthole release system be installed in the fresh-air intake registers to prevent smoke from entering the main theatre fresh-air duct system, in case of a fire in the projection room area.



General and emergency ventilation system: normal blower capacity 200 cu.-ft. per min.; emergency capacity 2000 cu.-ft. per min.

(A) Switch and pilot lamp for normal operation, inside projection room; (B) switch and pilot lamp for emergency operation, outside door of projection room; also connected to port fire-shutter control mechanism.

(Two or more fresh-air intakes required at or near the floor at opposite ends of the room).

Major Opposition to Theatre Tv

Most of the opposition to the plan of the motion picture industry to obtain substantial spectrum space for film theatre Tv is coming from two major groups in the mobile microwave fields. The American Petroleum Institute's Central Committee on Radio Facilities and the National Committee for Utilities Radio have disclosed that they are presenting to the FCC in the theater Tv hearings extensive testimony and significant exhibits to substantiate their positions that microwave systems are vital to their operations and are most important to the national mobilization implementation and the nation's economy.

With the leading electronic-radio manufacturers such as G. E., RCA, Philco, Federal Telephone & Radio, Raytheon and Motorola engaging in extensive development and production programs in microwave, the views of these major industries—as well as that of the military services—undoubtedly are to receive the most serious consideration by the FCC.

Introducing "Modulation"

By JACK BEHLKE*

Sound Engineer, Motiograph, Inc.

When television picture and sound information comes to the theatre through the air instead of over wires, it arrives piggy-back on a "modulated carrier." Theatre receivers contain some circuits that are tunable to the frequency of the carrier channel, and other circuits that take the information from the carrier by de-modulation. As an introduction to the electronics of modulation and de-modulation, this article outlines the essentials of the amplitude-modulation process that is applied at the transmitter, reversed in the theatre.

WE ALL KNOW that radio and television signals are sent through space between a transmitting station and a receiver in the form of what are called electromagnetic waves. We know also that if the radio or television receiver is to receive a program from a particular transmitter, it must be tuned to the frequency or wavelength of that transmitter. For instance, the signal of a well known transmitting station is 1,000 kc, which means that the radio wave sent by that station has an alternating current of 1,000,000 cycles per second (1,000,000 cycles = 1,000 kilocycles = 1 megacycle). As long as the station is on the air, it is transmitting this signal no matter whether there is a program on or a stand-by period. This signal is called the "carrier." It contains the energy and determines the location on the dial for that particular station.

The Unmodulated Carrier

Let us think for a few minutes about this "carrier" and what it is like when there is no program on the air. A radio station usually "warms up" for about one-half hour before its program starts, and you will recall hearing such a warm-up signal. If your receiver has a "magic eye," the eye will close showing that the station is there—you will hear a slight "hm—mm—m-n" in your loud-speaker as you tune in the station, but

you will not hear any voice, song, or other program. The reason you do not hear any program is because you are receiving a steady and constant carrier signal. Figure 1 illustrates this signal.

Since electromagnetic waves come fundamentally from a voltage source, we will speak only in terms of a voltage. The current in the antenna, the radiated wave, etc., will be assumed to follow the pattern of the voltage. Figure 1 illustrates a voltage producing the carrier. This voltage starts at zero value, shown by line II, at the left, increases to a maximum negative value, shown by line III, decreases to zero; increases to a maximum positive value, shown by line I, and decreases again to zero. This sequence forms one cycle and takes place in one one-millionth of a second in the case of a 1,000 kc wave.

Owing to the design of the various circuits, the voltage follows a pattern that is called mathematically a "sine wave." A sine wave is not circular, nor elliptical, but is the particular pattern called sine. The distance between line I and line II, or between line II and line III, is called the amplitude of the voltage and represents the maximum positive voltage attained or the maximum negative. The horizontal length of Figure 1 represents time, and if the signal is, as said, 1,000 kc, then the distance between *a* and *b* on the figure represents 1/1,000,000th second.

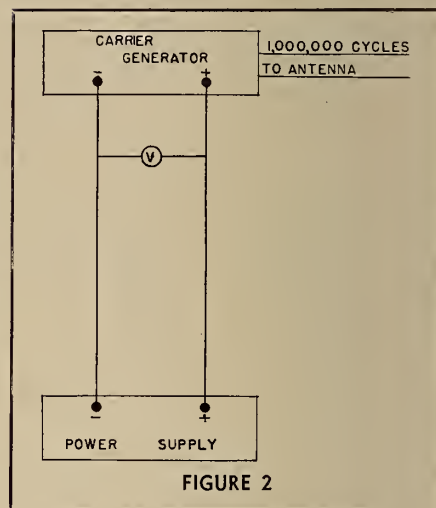
Now we can conclude two things

about the carrier that has no program:

- 1) It has constant amplitude; e. g., constant maximum voltages.
- 2) It has frequency; the distance between *a* and *b* is always the same and always represents a time of one one-millionth second.

Modulating the Carrier

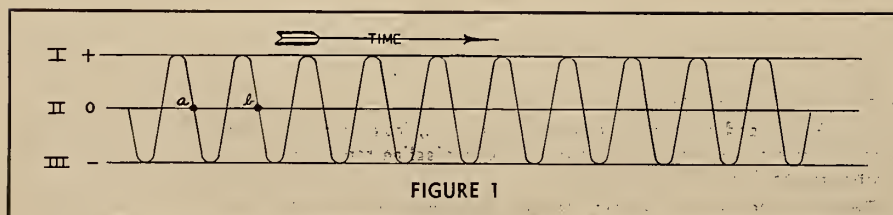
Now let us consider the modulation of this carrier wave. The word-modulate simply means to change, or to vary. We previously spoke of the carrier hav-



ing "constant amplitude" and "constant frequency," when there is no program being transmitted; this implies that we can modulate either the amplitude or the frequency, i.e., we can increase or decrease the amplitude of the carrier voltage keeping the frequency constant, or we can increase or decrease the frequency of the carrier while keeping the voltage constant. Either can be done; it is the purpose of this article to discuss the *former* case only, namely, *amplitude* modulation, not *frequency* modulation.

In Fig. 2 we have a block diagram of a simple radio transmitter: the top unit is the generator of the radio carrier which converts a DC voltage supplied by the power supply (lower unit) into a high frequency alternating voltage similar to that shown in Fig. 1. This voltage then supplies the antenna which radiates the electromagnetic waves. Such a set-up will produce a carrier without any program. Now if we insert an alternating current generator or a modulator between these two units, as in Fig. 3, we can superimpose a signal upon the carrier.

Let us assume that this generator produces an alternating current voltage of 1,000 cycles per second and that its



* Member, Chicago Local 110

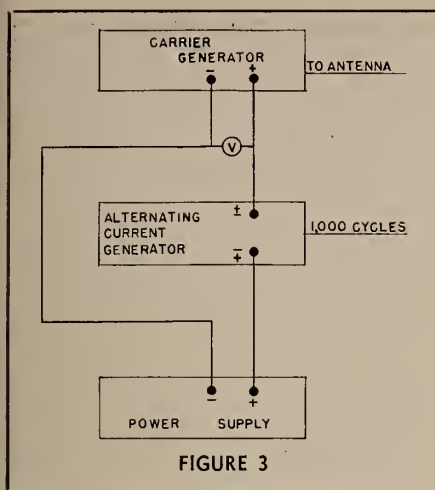


FIGURE 3

maximum amplitude is exactly equal to the DC voltage supply (lower unit), and also that the generator produces a sine wave voltage. Fig. 1 can be considered as representing this voltage also with these facts: (1) that the amplitude between lines I and II or II and III is equal to the DC voltage of the power supply (lower unit), and (2) that the time interval *a* to *b* is one thousandth of a second instead of one-millionth.

As the AC generator voltage builds up from zero, with its top terminal positive, its voltage will *add* to that of the DC power supply, and the voltage measured at "V" will be the *sum* of these two voltages. If the carrier generator is of good design, we can say that it is "linear", and the voltage that it delivers to the antenna will increase as the voltage applied to it increases. Thus at the moment the alternating current generator is producing its peak voltage (which we said above would be equal to that of the DC supply) the voltage applied to the carrier generator will be double, and the voltage applied to the antenna from the carrier generator will also be doubled.

After passing through its peak, the alternating current generator voltage decreases until it reaches zero, at which time only the DC power supply voltage is delivered to the carrier generator, and the voltage into the antenna will be the normal carrier voltage.

Now the polarity of the alternating current generator reverses and the voltage starts to increase, but with the top terminal negative instead of positive. This will mean that the voltage applied to the carrier generator at "V" will be the DC power supply voltage *less* the alternating current generator voltage, and the voltage supplied to the antenna will be *less* than the normal carrier vol-

tage. At the instant the AC generator is producing its maximum negative voltage, the voltage at "V" will be reduced to zero and the output voltage of the carrier generator will be zero.

Under the conditions described above, the carrier is said to be modulated 100%, which is actually determined by the fact that the output voltage is alternately doubled and reduced to zero.

Let us note also that since the voltage of the AC generator has a sine wave form, the peak positive voltage and the peak negative voltage occur for extremely short intervals of time—called instantaneous. The time required for the conditions described in the above two paragraphs to take place is one-thousandth of a second. However, during this time the carrier generator has produced one thousand waves, each one with a slightly different amplitude than the preceding one, sometimes slightly greater, sometimes slightly less. Fig. 4 shows these conditions.

The Modulated Signal

In Fig. 4, the waves represented from A to B form the unmodulated carrier, the same as Fig. 1. From *a* to *b* represents one wave of the carrier. The carrier positive amplitude is measured between lines II and III, the negative amplitude peak between lines IV and III. The effect of the addition of the voltage from the alternating current generator is shown beginning at B, the dash line B to C to D to E to F showing the combined DC power supply and AC generator voltages.

The pattern from B to F represents one cycle of the AC generator voltage, which takes place during one one-thousandth of a second. (Note that if space permitted drawing Fig. 4 realistically instead of only symbolically, the space between B and F would have one thousand waves drawn in instead of the few that the figure shows.) From F to G the carrier again is unmodulated.

Now let us consider the effect of this modulation upon the power radiated.

In Fig. 4 carrier power is increased from B to C to D, but it is decreased in the same pattern from D to E to F. If we were to turn the pattern of the increase around, we can see that it would exactly fill in the decrease D to E to F. If the carrier is averaged from B to F, its power is exactly the same as from A and B and unchanged.

Sidebands

But we have added power—we have superimposed the output of the AC generator upon the output of the carrier generator. Where did it go?

The reader may recall driving along a highway and passing a large truck or bus. At the moment of passing he very probably was aware of a throbbing of the two motors. This illustrated a principle of the physics of sound: that if we have two sounds in the same area and they are different in pitch, two additional sounds will be produced, one equal to the sum of the two pitch frequencies, the other equal to the difference of the two pitch frequencies.

In the case of the cars, the reader was able to hear a throbbing equal to the difference between the two frequencies of the two motors. The theory is that any two frequencies superimposed will alternately reinforce and cancel in such a manner that two new frequencies are produced, one equal to the sum, the other equal to the difference, of the two originals.

In television and radio these two new frequencies are called the sideband frequencies. Using the case discussed above, the carrier frequency of 1,000,000 cycles and the AC generator frequency of 1,000 cycles will produce two new frequencies: 1,001,000 and 999,000 cycles per second, called sidebands. Since the power supplied by the AC generator does not cause any increase in the average carrier power, it must be equally divided between the two sideband frequencies. Each sideband will therefore contain one-fourth as much power as the unmodulated car-

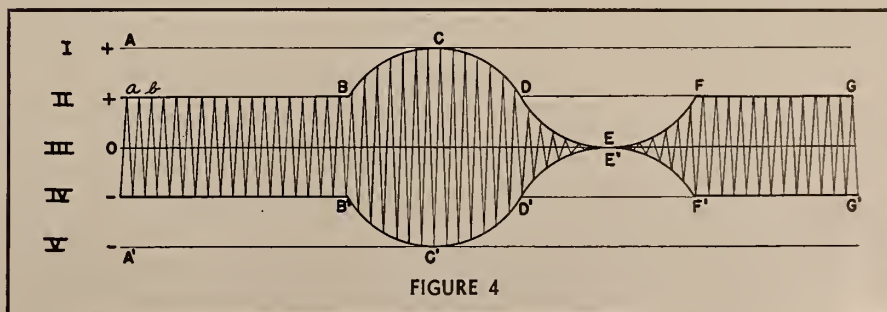


FIGURE 4

rier, and since the power depends upon the square of the voltage, each side-band voltage will be half as large as that of the unmodulated carrier. ($\frac{1}{2}^2$ equals $\frac{1}{4}$).

Details of Practical Application

For the sake of simplicity in presentation, it was assumed above that the "information" which was modulated upon the carrier frequency consisted of a pure 1,000-cycle tone, of sine wave form. In practice, of course, the information which the carrier accepts for delivery to the distant receiver is an extremely complex wave embodying all of the frequencies of the sound to be transmitted (or of the television image to be transmitted).

In practice, therefore, the modulation "envelope"—the distance B to F in Fig. 4—does not normally present the smooth, sine wave form there

shown, but a very jagged and irregular pattern which varies in outline from moment to moment with changes in the sound (or in the TV image detail). The general shape of such jagged, irregular sound patterns is familiar to every projectionist who has ever looked at a variable-area soundtrack; and those of TV image modulation are not dissimilar in general appearance.

Amplitude Modulation Only

In closing, it should be emphasized once again that all of the foregoing relates only to *amplitude* modulation. There is also, as noted above, *frequency* modulation, which will perhaps be described herein in a future issue. The processes of de-modulation, as incorporated in the theatre's equipment, vary according to both the type of modulation to be received, and the preferences and judgment of equipment manufacturers.

the dropper rubber bulb and you will be able to apply the right amount of cement to make a good splice. The cement is always clean and kept air-tight when not in use.

Although Cinerama may be the shot in the arm the movies need, it seems to me that the high costs involved put it far out of reach of neighborhood and small-town theatres. Isn't it possible to project Cinerama with three 16-mm projectors (with arc lamps) on a curved screen smaller than the 64' x 23' screen now in use, employing, of course, the same angle of vision—146 x 55 degrees? The smaller picture size necessary from each projector should provide sufficient light from a 16-mm projector. It is quite likely, however, that this would call for some research on screen surfaces in order to keep down interfering reflection from each projector, which is bound to be greater with a smaller screen when curved.

K. C. BRIDGES

Exeter, Ont., Canada

[Possible to utilize 16-mm for an effect similar to that achieved by Cinerama, but such a setup wouldn't have the vast sweep and scope of present 35-mm equipment—in short, it wouldn't *awe* the customers. Cement bottle tip sounds like a good idea.—Ed.]

To the Editor of IP:

Thought you might be interested in carbon-handling pliers which I bought about 16 years ago. I have been told that they are called "battery" pliers. When I saw them in the window of a hardware store I didn't ask what they were called; I knew immediately that they would be ideal for handling carbons. And they sure are. The maker's name is not on them—they are stamped only "Blue Bird No. 12 USA."

H. Y. BALLOU

Member, IA L. 150, Los Angeles, Calif.

[Blue Bird pliers are made by Bergman Tool Mfg. Co., Inc., 1573 Niagara St., Buffalo 13, N. Y., which advises that the No. 12 model has not been made for the past 15 years. However, similar models are available.—Ed.]

RCA's 3-D Projection Kit

RCA has announced a kit containing all materials required to synchronize two projectors for presentation of 3-D motion pictures. Also, it was announced that tests have shown the RCA seamless silver screen to be well-suited for 3-D showings. These items, as well as the new extra-wide RCA Synchro Screens, are included in the company's complete 1953 line of indoor theatre and drive-in equipment. The "Synchro Screen" enhances the illusion of spectator participation in the screen action, it is pointed out, by providing illuminated side and top panels which extend peripheral vision.



To the Editor of IP:

Here's my renewal. Still enjoying IP—it's tops. Here's an item: don't know how many other projectionists have noticed it, but why the negative splice marks on most Technicolor release prints? They appear approximately every 2 feet, even without a scene change. Naturally, they can't be seen, being midway on the frame line, but I have noticed these marks on quite a number of Technicolor prints. I might mention that the prints are all American dupes.

I am interested to learn via IP that another major projector manufacturer is working seriously with an airblast onto the aperture. How about taking another leaf out of the Erneman (Zeiss Ikon) copybook and do what they were doing back in 1928—blowing the air onto *both* sides of the aperture via a very simple *water filter*? Zeiss engineers always maintained that the air be properly cooled and cleaned before passing through the jets.

DOUGLAS A. HARLEY

Embassy, Auckland, New Zealand

[These splice print-throughs are caused by splices in the "negative" which prints the frame-lines in silver. Since this "negative" is merely a loop which runs over and over, the image of the splice occurs at regular intervals in the positive print, regardless of scene changes. The length of film in this loop may be ascertained by measuring the

length of film in the print between splice marks.

Scene-to-scene changes leave no splice print-throughs in a Technicolor release positive, however, for in color printing the frame-line area is masked off. This procedure would normally leave white (clear) frame-lines. In order to avoid white frame-lines, the Technicolor printing-film contains black frame-lines (as well as a sound-track) in silver image. The black-and-white work is done before the stock is color-printed by the Technicolor process.

Mr. Harley will note that the frame-lines in Technicolor prints are gray, rather than deep black. By printing the silver-image frame-lines lightly, photographic fogging, with consequent encroachment of the frame-line images into the top and bottom of the picture frames, is avoided.—Ed.]

To the Editor of IP:

The small bottle on the rewind table that holds the cement for immediate use usually has a cork stopper, with a brush stuck in the cork. After several weeks use, pieces of cork or bristles from the brush will be found in the cement. Replace this bottle with one that has a medicine or eye dropper and a screw-cap top.

These bottles come in brown glass which keeps out the light that effects some types of cement, and they may be obtained for a few cents from any drug store. The tops are made of plastic and have a rubber seal, with the dropper fixed to the top. A little practice with

Types of Theatre Sound Reproducers

This is the second of a series of articles analyzing the essential nature of devices that convert sound records into electrical currents.

Two general types of these devices, the disk reproducer and the soundhead, are used in theatres at present, while the magnetic reproducer is growing increasingly popular for 16-mm projection.

II. The Variable Reluctance Pickup

By **ROBERT A. MITCHELL**

VARIABLE reluctance pickup is the descriptive term applied by its manufacturer to a special form of magnetic reproducer designed for particularly excellent quality. As the name implies, the device operates via variations in the reluctance (magnetic resistance) of the flux path, produced by needle vibration. A special feature of this unit is the exceptionally slight mass of the moving element. Because of this, quality can be excellent but output must be very weak; in fact, a two-stage pre-amplifier is needed.

The variable reluctance pickup, a General Electric product, has been made available in several models, including a triple-turret type that can be adjusted to play either 33-1/3, 45, or 78 rpm records by simply turning a knob. Sapphire or diamond styli are used.

The Crystal Pickup

The crystal pickup is an alternating-current generator. Certain kinds of crystals have the amazing ability to generate a pulse of current when subject to a twisting, or torsional, strain. Most commercial pickups employ crystals of potassium sodium carbonate,

more commonly known as Rochelle salt.

Figure 2 illustrates the construction of a commonly used make of crystal cartridge. Note that the movements of the needle are transferred to the stiff metal band which holds the flat slab of Rochelle salt. Because the two ends of the band are not connected except by the rotary-vibrating needle-holding shaft, the band, and hence the insulated and moisture-proofed tablet of crystal it holds, twists slightly as the needle moves from side to side in the wavy record-groove. Strips of copper foil fastened to opposite sides of the crystal pick up the tiny currents generated by the crystal and conduct them to the terminals of the cartridge.

The cartridge is tightly sealed and cannot be taken apart without completely ruining the unit. Damaged or worn-out crystal pickups cannot be repaired by anyone; so if the crystal gets fractured by dropping the pickup, or deteriorates through the effects of heat, dampness, etc., only a new cartridge will restore the phonograph. Fortunately, crystal cartridges are not too expensive, and their replacement in the tone-arm of the reproducer is a very simple operation.

Crystal Pickups Not Rugged

A crystal pickup is not the most rugged device in the world. It will stand just so much abuse, and no more. Should the crystal shatter, through rough handling, the pickup will give no sound except a harsh grating noise. If kept at temperatures in the neighborhood of 100 degrees Fahrenheit, the crystal will quickly deteriorate. At 125 degrees it spontaneously turns to powder, and at slightly higher temperatures the salt melts.

When well cared for, a crystal pickup will give good results for several

years in cool, dry climates. Progressive loss of volume and noticeable attenuation of the low frequencies, resulting in weak, "tinny" sound, are good indications that the cartridge is about to expire.

The frequency-response of a new crystal pickup is very good over the entire range of reproducible frequencies (40 to 8,000 cps), but the type of needle used and the electrical characteristics of the input circuit influence the reproduction of bass and soprano tones. Because of this fact, however, we are able to obtain the type of response which gives the most natural and pleasing reproduction of disk records.

Pickup Connection

Inasmuch as the crystal pickup is a high-impedance device, it may be connected directly to the grid of the input tube of the amplifier. In practice the pickup is connected to a 500,000-ohm load resistance, and the voltage-drop developed across this resistance is applied to the tube. Since the volume-control potentiometer of the system has a resistance of this order, one lead from the pickup may be connected to the "hot" end-terminal of the potentiometer, the other pickup-lead being connected to the grounded end-terminal of the potentiometer—or simply to the "floating ground" of the amplifier. These connections are shown in Fig. 3.

In a motion-picture sound amplifier the first voltage-gain stage is a pre-amplifier for the photoelectric cells of the sound-on-film reproducers. The crystal-pickup output is usually introduced into the system at the second voltage-gain stage—the stage follow-

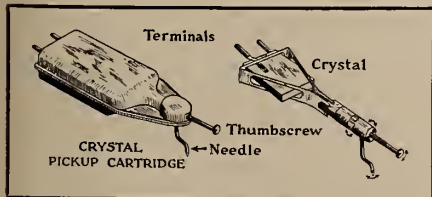


FIG. 2. A crystal pickup cartridge. The small arrows in the right-hand drawing indicate the vibratory movements of the needle and its holder. Because the metal band is anchored only at its end, vibration of the needle imparts to it and the crystal of Rochelle salt the twisting motion which generates current.

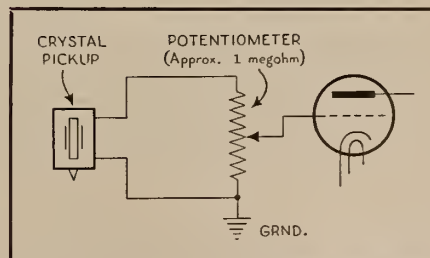


FIG. 3. This diagram shows how a crystal pickup is connected to an amplifier. No input transformer is necessary because the electrical impedance of the crystal is very high.

ing the preamplifier. A crystal pickup furnishes an enormously more powerful signal-current than a photocell does.

Over-amplification must be guarded against, for if the amplitude of the incoming signal is too great for the grid of the tube to handle, the modulated plate current will not be an exact facsimile of signal generated in the pickup. This means that distortion will arise; and it happens that this is "even-numbered harmonic distortion," which sounds pretty awful. (Music will be a harsh jumble of sounds, and voices will sound as they might in Bell's first telephone.)

Reproducer Circuitry

But if for some reason the output of the crystal pickup must be fed to the preamplifier (as is sometimes the case with small theatre amplifiers when an especially "boomy" bass is desired), several important safeguards must be observed.

1. Photocell bias, or polarizing, voltage must be kept out of the crystal pickup by means of a small condenser in series with the "hot" pickup-lead.

2. Excessively strong signal to be avoided by shunting the pickup-leads (on the pickup side of the series condenser) with a resistor, a condenser, or both in parallel, depending on the frequency-response characteristics desired.

3. A double-throw "Film-Disk" switch must be placed in the pickup circuit on the photocell side of the series condenser. The switch should be installed in the preamplifier cabinet in order to avoid long leads and the resulting capacitance which attenuates high frequencies. If such a switch is not installed, sound-on-film reproduction will suffer from loss of volume and poor high-frequency response.

4. Lead-wires from the amplifier to the phonograph pickup should be in shielded cable to avoid noise and hum.

External Modifications

Most modern amplifiers have built-in phonograph and microphone input jacks, however, making it unnecessary for the projectionist or service engineer to tap into the system. But in any event, certain pickup-circuit modifications may be made external to the amplifier in order to change the response of the pickup.

If, for example, the sound from the disk reproducer is too harsh and metallic, giving evidence of excessive high-

frequency response, a small condenser (about 0.002 microfarad) may be connected in shunt with the pickup, as shown in diagram A of Fig. 4. Such a condenser is called a "scratch-filter" because in slightly reducing the high-frequency response it decreases surface noise.

A scratch-filter condenser is much more effective when connected from the plate of the first amplifier tube to the floating ground of the amplifier; but this "internal" hookup should not be made because it would cause the sound-on-film reproduction to sound muffled and indistinct.

If the sound from the phonograph seems thin and "tinny," the low frequencies are not being amplified enough in proportion to the higher frequencies. This condition can be corrected, if the amplifier has sufficient gain, by connecting a resistor of from 500,000 to 5,000,000 ohms in series with the "hot" lead of the crystal pickup; and the higher the ohmic resistance, the greater will be the reduction of high frequencies in proportion to the low.

Simple Equalizing Circuit

In fact, a 1-megohm (1,000,000-ohm) resistor will give a nearly flat, or even, response from 40 to 6,000 cps; while a 5-megohm (5,000,000-ohm) resistor boosts the bass response to give a "boomy" quality of reproduction and very little surface noise. The risk here is that the sound may be

muffled too much. Diagram B of Fig. 4 shows the hookup.

Response curves of a popular make of crystal pickup reveal a slight unevenness in the bass response from 40 to 300 cycles. While these inequalities are almost too slight to matter, it is interesting to know that a simple equalizing circuit smooths them out to give a more uniform low-frequency response which conforms closely to the response of commercial disk records of good quality. Diagram C of Fig. 4 illustrates the compensating circuit. Connect a 750-micromicrofarad condenser in series with the pickup "hot" lead, and shunt this condenser with a 750,000-ohm resistor.

Needle or Stylus

As said before, the needle has something to do with the frequency-response of the pickup. Since crystal pickups are very light—the needle-pressure on the records being $\frac{3}{4}$ to $1\frac{1}{4}$ ounces — semi-permanent needles can be used in them. To be sure, such needles *should* be used in crystal pickups. They are more accurately made than the ordinary steel needles, and they eliminate frequent needle-changing with attendant risk of fracturing the crystal.

A truly permanent stylus, however, is a non-existent animal, despite the claims of certain needle-manufacturers to the contrary. Don't let anyone tell you that a "last-forever" needle has or can be made. The diamond is the hardest substance known; and even a diamond-point needle wears out in time, developing a flat spot which distorts sound.

Although the diamond stylus outlasts other kinds, it is not recommended because (1) it shatters very easily, and (2) the diamond point lasts only two or three times as long as the sapphire stylus which it exceeds in price by as much as 15 times.

The reason why diamond points cost so much is not because the diamond is a rare gem. The cheap and discolored carbonado diamonds used for phonograph needles are actually worth about a nickel apiece in the uncut state. It is the process of polishing the point with diamond dust on a lapidary's wheel that accounts for the cost. Sapphires, on the other hand, can be quickly and cheaply flame-polished after preliminary rough grinding with inexpensive abrasives. Diamond can-

(Continued on page 29)

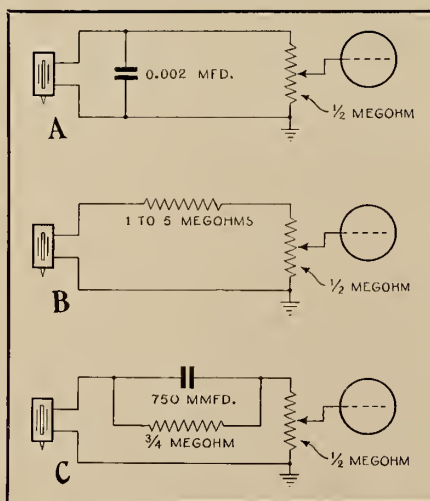


FIG. 4. Crystal-pickup circuit modifications. The use of a small condenser to filter out needle scratch or surface noise. (B) Improving bass response by adding a resistor to increase terminal impedance. (C) Conforming bass response to the characteristics of commercial phonograph records by means of a simple equalizing circuit.

IP SERVICE BUREAU

Questions relating to any phase of motion picture technology of interest to the projectionist craft generally are solicited for this department. The answers thereto will be forthcoming promptly. Each topic discussed will bear an index number for easy reference and, if so desired, inclusion in a compendium.

101. Ansco Color Film: Color Balance, Definition

I should appreciate clarification of several points made in the article "The New Ansco Color Film and Process," by Robert A. Mitchell, in IP for December last (p. 13). I have had experience with Ansco Color prints as used in the U. S. Air Force training program, and I find that good focus is something to be desired rather than, as the article states "... development insures extremely good image-definition. Furthermore, the non-diffusing characteristics of the dyes safeguards this excellent definition ..."

I assume that the prints I mention were originally photographed on 35-mm film and that optical reductions were made for release prints, although the color balance and definition is not up to par.

S/SGT. WESLEY BRIGHT, Senior Specialist, Film Exchange, Ramey Air Force Base, Puerto Rico.

I ASSUME that the films referred to are Ansco Color 16-mm prints; prepared by reduction-printing from 35-mm originals. I cannot, however, venture a guess as to whether the 35-mm films used for printing were duplicate negatives in full color, master positives in full color, black-and-white separation negatives, or black-and-white separation positives. Such information would greatly facilitate trouble-shooting, as the printing of color film is a very critical operation. A clip from an offending film might provide a definite clue.

I am sure that the trouble definitely does *not* originate in the Ansco Color film itself. The statements I made in my article, *viz.* that the cyan, magenta, and yellow dyes are formed in the closest contact with the silver grains produced during development, and that the Ansco Color dyes are non-diffusing in character, are really true. In fact, the "resolving power" of Ansco Color Type 848 35-mm and Type 248 16-mm positive printing films is consistently 55 to 60 lines per mm.

It can thus be seen that the image-definition obtainable with Ansco Color compares favorably with that of panchromatic black-and-white emulsion, and is of the same order as that obtainable with Ektachrome, Warner Color, Agfa-color, and other multilayer "monopack" color films.

Fault in Taking, Processing?

When Ansco Color prints are made directly from color negatives, either by contact or by optical projection printing, any poor focus appearing in the prints

must be due either to poor photography or to inexpert handling of the printing process. Because the three color emulsions of Ansco Color are combined to form a single "pack" which is only a trifle thicker than ordinary black-and-white emulsion, there is no undue optical diffusion in the emulsion itself.

There are no registration problems in simple Ansco Color printing, of course. Registration problems are introduced only when the color prints are prepared by a process which involves the use of three black-and-white separation films, one being the "red record" (printed cyan); the second being the "green record" (printed magenta); and th

third being the "indigo record" (printed yellow).

Ansco Color theatre-release prints are printed from duplicate color negatives prepared by triple exposure to black-and-white separation positives through red, green, and indigo filters. This method was used for making the 35-mm Ansco Color prints of M-G-M's "The Wild North," which you have probably already seen, and M-G-M's "Vaquero," soon to be released.

Separation-Print Method

The separation-print method possesses many distinct advantages for professional work, one of them being great flexibility in color and density control; but it should not be used by laboratories not completely equipped with the most modern apparatus for handling this more complicated step. The three color-record images from the separation films must be *exactly* superimposed, the slightest deviation from perfect registration affecting adversely image-definition.

Image definition in all trichromatic natural-color films is determined primarily by the green record, represented by magenta dye in the color films. It is therefore imperative that particular care be taken in all duplication steps to preserve maximum possible definition in the green record and magenta image.

It is entirely possible that the image-definition of the Ansco Color reduction prints to which you refer deteriorated in the optical reduction-printing process. It not infrequently happens that even black-and-white 16-mm reduction prints from 35-mm masters of good quality suffer from fuzzy focus. The success of optical printing depends not only on the quality and condition of the projector-

(Continued on page 33)

25-30 CLUB HOLDS INSTALLATION OF NEWLY ELECTED OFFICIALS



The Club's official family for 1953. Left to right: Tony Boscarelli (member, Local 384, Hudson Co., N. J.), elected trustee to serve three years; Abraham Kessler (treasurer, N. Y. Local 306), vice-president; John Krulish (member, Local 306, and field service supervisor for National Theatre Supply), president; Morris J. Rotker (member, Local 306), installing officer; Edward J. Dougherty (member, Local 384, Hudson Co., N. J.), incumbent; Abe Seligman (member, Local 306), sgt.-at-arms; Benjamin Stern (member of board of trustees, Local 306), re-elected financial-secretary and treasurer; and Morris I. Klapholz (member of Local 306 retirement board), reelected recording and corresponding secretary.

IN THE SPOTLIGHT

FIRST official act of the Harry Sherman Memorial Heart Fund, founded by the 25-30 Club, Inc. of N. Y., was the presentation at the January meeting of the Club of a beautifully engraved scroll of the original resolution establishing the Fund to the widow of the late conductor of IP's "In The Spotlight" columns. IA President Richard F. Walsh made the presentation to Harry Sherman's brother, Isadore, who accepted it on behalf of Mrs. Sherman.

In making the presentation, President Walsh said:

"I am glad to be asked to do something for the memory of a man who did a lot for the 25-30 Club. Those who knew him can't say anything but the best about Harry Sherman. I knew Harry and I knew him well. He would go out of his way to help you. Maybe that's why the fellows in the 25-30 Club thought so much of him. If you look back through the record, you will also find it written that a man named Harry Sherman did many, many good things for the IA and for the members of his Local 306."

The scroll was conceived and executed under the personal supervision of Judge Nathaniel Doragoff, member of N. Y. Local 306, who is the referee for the New York State Compensation Commission.

Morris J. Rotker, past president and one of the Club's organizers, presented President Walsh with the first check to be drawn on the Harry Sherman Memorial Heart Fund as a contribution to the Will Rogers Memorial Foundation. The IA head is a vice-president of Will Rogers Hospital at Saranac Lake, N. Y., for which the amusement industry is now conducting a vigorous fund-raising drive.

About 350 people assembled to pay tribute to the memory of a man whose

loyalty and willingness to lend a helping hand to his fellow-men are so well known to his many friends in and out of the industry.

Among the out-of-town guests, introduced by Rotker, were Charles Wheeler, secretary of the N. Y. State Assoc. of Motion Picture Projectionists and member of Local 108, Geneva, N. Y.; Al DeTitta and Ralph DeMea, vice-president and business representative, respectively, Local 384, Hudson County, N. J., and Harry Lackey, business representative, Local 337, Utica, N. Y.

Others introduced by Rotker included Arthur Meyer, vice-president of International Projector Corp.; Allen G. Smith N. Y. City branch manager for National

Theatre Supply Co.; Dave Joy and Paul Reis of National Carbon Co., and also Bill Kunzmann, recently retired from the same organization.

Also present were Harry Garfman, Brooklyn business representative for N. Y. Local 306; Charles Eichhorn, Edgar T. Stewart, and Dick Cancellare, members of Local 306 executive board; Isadore Schwartz, Local 306 financial secretary; Charles Muller, chief projectionist at Radio City Music Hall; Charles Kellner, projection supervisor at RCA's preview theatre; Vincent Jacoby, president of N. Y. Local 1, and 25-30 Club old-timers Mike Berkowitz, Harry Mackler, and Al Kaye, all past presidents.

• At a regular meeting of IA Local 110, Chicago, held on February 5 last, Eugene J. Atkinson was re-elected Business Manager, and Clarence A. Jalas was re-



Eugene J.
Atkinson

Resolution

ADOPTED BY

25-30 CLUB, INC., OF NEW YORK

WHEREAS: in the passing of

HARRY SHERMAN

the 25-30 Club, Inc., has suffered a great and irreparable loss and will miss his stimulating leadership, inspiring eloquence, wise council, kindly humor and helpful participation in the many activities of the Club and contributed so much to its growth and progress, and

WHEREAS:

HARRY SHERMAN

was a pioneer member of Local 306, holding thru the years many important offices, including that of President; and later as Assistant President of the International Alliance of Theatrical Stage Employees and Motion Picture Machine Operators' Union of the United States and Canada, winning in these positions the respect, regard and admiration of its members, and

WHEREAS: a committee has been appointed by the 25-30 Club, Inc. to assist in the campaign for Research that will lead to a reduction of Cardiac Diseases, and the Relief of its members suffering from this widespread and terrible affliction, therefore be it

RESOLVED: that in order to carry out the purpose of this committee, and as tangible evidence of our esteem, the HARRY SHERMAN MEMORIAL HEART FUND of the 25-30 Club, Inc., be created, and be it further

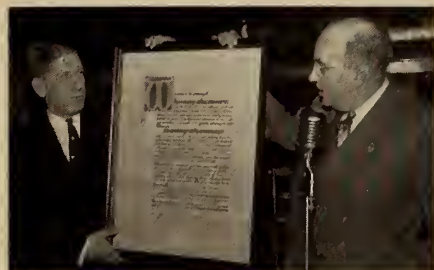
RESOLVED: that a copy of this Resolution be engrossed and presented to his beloved wife, Ruth E. Sherman.

elected Secretary-Treasurer, both for five-year terms. The terms of office for the balance of the officers will expire in February, 1954.

• The dispute between Pittsburgh Local 171 officials and the Warner Theatre management relative to the proper classification of the 3-dimensional picture "Bwana Devil" has aroused considerable interest throughout the industry. It is the contention of James V. Sipe, business representative of the Local, that the showing of 3-D films requires more work and skill on the part of projectionists and that the men are entitled to more pay. Local 171 claims that this



Marris J. Ratker (right), past president of the 25-30 Club, presents IA President Walsh with the first check drawn on the Harry Sherman Memorial Heart Fund for the Will Rogers Memorial Foundation.



IA President Walsh (right) presents the Harry Sherman Memorial Heart Fund scroll to Isadore Sherman.

new medium is not covered in its contract with the circuit. The matter has been deferred to the IA General Office for further clarification. Whatever the decision, it will be retroactive to the opening of the film.

- A fire that originated in the projection room of the Wisconsin Theatre, in La Crosse, Wis., completely demolished the building in which it was housed. Fortunately, the theatre was empty when the fire broke out and there were no casualties.

- In an effort to thwart off the invasion of TV, Mexico's projectionists have organized to develop 3-dimension films. Although the only TV stations in Mexico at present are those located in the capital city, many applications have been received for permits to operate along the American border.

- We are sorry to learn of the illness of George Harris, one of the veteran members of Milwaukee Local 164. We wish him a speedy recovery.

- Recent out-of-town visitors to the offices of IP: Eddie Miller, IA representative and business representative for Local 279, Houston, Texas, and R. E. "Rut" Morris, IA trustee and business representative for Local 142, Mobile, Ala.

- Morris J. Rotker, member of N. Y. Local 306 and the 25-30 Club, was recently re-elected chairman of the Bronx (NYC) Local School Board. He was also re-elected treasurer of Samaritan Lodge No. 1035, F. & A. M.

- The next regular meeting of the IA General Executive Board will be held at the Last Frontier Hotel, Las Vegas, Nev., on Monday, March 2.

- Thomas J. Shea, 53, assistant president of the International Alliance died January 14 at the Will Rogers Memorial Hospital, where he had been a patient for several months.

Shea was a native of Middletown, Conn. and joined the IA in 1918. He was business representative for Meriden-Middletown Local 350 from 1926 to 1933, later taking over the same office for the newly-chartered Middletown Local 375. Prior to his appointment as IA assistant president in 1943, Shea held office in the Connecticut State Federation of Labor. He was a member of the Connecticut legislature, serving from 1934 to 1938, when he was appointed appeals commissioner in the State Department of Labor, where he remained until 1940. In 1943 he was appointed IA representative by President Walsh, and was ad-

vanced to the office of assistant president in 1945.

He is survived by his wife, Alice; his mother, two daughters, one son, and three grandchildren.

- The University of California will hold its first classes in television one night each week beginning February 1953. The course is called *Television Principles and Practices*.

- The long-drawn out negotiations between New York Local 306 and the New York metropolitan and first-run Broadway houses seem to have struck a snag. Discussions have been going on since September 1952, when the old contracts expired, and the present stalemate is said to be causing considerable dissatisfaction in the ranks of 306. The Local

is seeking an overall 15% increase, 13% of which is a direct wage hike and 2% for the welfare fund. Also, for the first time in their discussions with the exhibitors, Local 306 officials have introduced the subject of extra pay for preparatory time.

- A midnight banquet on January 23 marked the 34th anniversary of Local 386, Columbus, Ohio. Many special guests, including top IA officials, attended the celebration.

- The month-old strike called by Los Angeles Local 150 against the 18 drive-ins operated by the Pacific Drive-In Theatres chain, ended recently with a compromise settlement. Local 150 sought to place two projectionists per shift in each of the drive-ins playing first-run pictures. The compromise settlement pro-

JOE CROW,
CHARTER MEMBER,
HONORED BY
LOCAL 421,
HERRIN, ILLINOIS



A lifetime membership card in Herrin Local 421 was recently presented to Joe Crow, member of the Local since 1914. Crow was born in 1883 and is said to be the oldest living projectionist in Southern Illinois. He is at present working at the Fox Globe Theatre in Christopher, Ill.

Top photo shows Crow holding the life membership card which was presented to him on behalf of the Local by Gus Dulumbeck (standing next to him), executive board member. In the background are Kenneth G. Alley (left), trustee, and (right) James H. Park, recording-secretary. Center and bottom photos show the officers and members of the Local gathered at the party.



Harry Gorfman (center row, second from right), and Izzy Schwartz (extreme left, same row), sponsor a party for the patients of St. Giles Hospital in Brooklyn.

vides for the two-man shift in four of the drive-ins showing first-runs, and for a 25c per hour increase over the basic scale for the men working single shifts in the other drive-ins when first-runs are shown. IA President Walsh and George Schaffer, Local 150 business representative, were in charge of negotiations for the Local.

- For many years Harry Garfman, Local 306, Brooklyn business representative, has taken an active interest in the rehabilitation of underprivileged children. He is aided in this work by the Movie Social Club of Brooklyn, comprised of Local 306 members. In addition to lending financial aid to various worthy causes, the Club puts on free weekly picture shows, stages Christmas parties for the patients of a number of Brooklyn hospitals.

IA ELECTIONS

LOCAL 48, AKRON, OHIO

Stanley Fritz, *pres.*; Karl Hermann, *vice-pres.*; Hal Claffin, *sec.*; Charles Hermann, *bus. rep.*; Arthur Anderson, H. B. Claffin, John S. Botts, and Marvin Harlan, *exec. board.*

LOCAL 253, ROCHESTER, N. Y.

Louis Levin, *pres.*; Bert Blackford, *vice-pres.*; Lester D. Barager, *sec.*; Leon Burton, *treas.*; Allen J. Tindal, *bus. rep.*; Robert Cragg, Abe Orden, Charles Mason, Jr., *exec. board.*; C. Mason, *trustee*; Joseph Vecchio and A. Orden, *del. Rochester AFL Central Trades and Labor Council*; John Copple, *sgt.-at-arms.*

LOCAL 257, OTTAWA, ONT., CANADA

James P. McGuire, *pres.*; John Macauley, *vice-pres.*; W. Murray Hall, *sec.-treas.*; William H. Hartnett, *bus. rep.*; E. Field, L. Lamothe, L. Simpson, *trustees*, and S. Ventura, *sgt.-at-arms.*

LOCAL 332, CLINTON, IOWA

Harold C. Andrews, *pres.*; James Wosoba, *vice-pres.*; A. E. Hubbard, *sec.*; Tom Melten, *treas.*; Paul Nadelhoffer, *bus. rep.*; Eugene Boos, *exec. board*; Wosoba, *sgt.-at-arms*; Nadelhoffer and Hubbard, *del. Clinton Labor Congress.*

LOCAL 348, VANCOUVER, B. C., CANADA

Alf McManus, *pres.*; Wm. McCarthy, Jr., *vice-pres.*; James Baldwin, *sec.*; Frank Smith, *treas.*; Ray Wardrop, *rec.-sec.*; Les Walker, *bus. rep.*; Nip Gowen, Jr., *member at large.*

LOCAL 376, SYRACUSE, N. Y.

Louis R. Boyd, *pres.*; Melvin A. Denny, *vice-pres.*; George F. Raaflaub, *sec.*; Lionel B. Wilcox, *fin.-sec. and treas.*; Walter M. Scarfe, *bus. rep.*; Kenneth D. Wilcox, *sgt.-at-arms*; Lawrence F. Sherman, Harry C. Burley, *exec. board*; Charles R. Nelson, John H. Eccles, Adolph Den Haese, *trustees*; Philip T. Rossomando, *del. Central Body*; George Doss, *16-mm bus. rep.*, and Warren E. Williams, *chairman, 16-mm.*

LOCAL 380, OKLAHOMA CITY, OKLA.

Berlin Parks, *pres.*; Robert Croasdale, *vice-pres.*; Bert Bell, *fin.-sec.*; Jerry Jeter, *rec.-sec.*; Kenneth Lyons, *bus. rep.*; John A. Cole, *sgt.-at-arms. Board of trustees*: Omar Woodard, *chairman*; J. O. Buckles, and Alva Lyons, Sr.

LOCAL 386, COLUMBUS, OHIO

Donald V. Gardner, *pres.*; H. Meade Feather, *vice-pres.*; David R. Cornwell, *sec.-treas.*; Calvin Beard, *fin.-sec.*; Bill W. Weltz, *rec.-sec.*; Ned R. Welch, *bus. rep.*; Paul Wareham, *trustee*; William Constans, *health and accident trustee*; and Willis S. Persons, *sgt.-at-arms.*

LOCAL 407, SAN ANTONIO, TEXAS

W. R. Tink, *pres.*; Alfred Pena, *vice-pres.*; Henry Villapadierna, *sec.-treas.*; Horace E. Blum, *rec.-sec.*; W. B. Keeler, *bus. rep.*; Phil N. Wehrmann, and Manuel Ayala, *member, at large.*

LOCAL 586, COLUMBUS, NORFOLK, GRAND ISLAND, HASTINGS, AND YORK, NEBR.

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Fritz Devantier, *pres.*; Bert Penzien, *vice-pres.*; Norman Pingel, *fin.-sec.*; Earl Natzel, *cor.-sec.*; George Konath, *treas.*; Roy Suckling, *bus. rep.*; Shorty Bushard, *sgt.-at-arms.*

PERSONAL NOTES

E. ALLAN WILLIFORD has been elected president of Link Aviation, Inc., Binghamton, N. Y. He succeeds Edwin A. Link, founder, who continues as chairman of the board and director of research. Mr. Williford has been vice-president and general manager of the Link firm since February, 1950. A graduate of the University of Illinois and a veteran of World War I, he was previously general sales manager of the Carbon Products Division of National Carbon Co.

GEORGE FRIEDL, Jr., v-p of Technical Industries, Inc., Pasadena, Calif., has been named works manager of Link Aviation, Binghamton, N. Y. Friedl has been active in the precision instrument field for more than 20 years, notably with General Precision Equipment Corp. as director of engineering for International Projector Corp. and, later, as president and director of Librascope, Inc., of Burbank, Calif.

Friedl was associated with Western Electric from 1928 to 1937, where he was active in the design and manufacture of many components of the W. E. sound system. He also developed a sound system for IPC and has charge of its production.

BLAIR FOULDS has been elected a vice-president of General Precision Labs, Pleasantville, N. Y., a wholly-owned subsidiary of General Precision Equipment Corp. He has served for several years as director of commercial engineering for the company, with special emphasis on the marketing of broadcast studio and theatre Tv equipment.

A. JOHN PLATT has been named manager of theatre equipment sales for RCA Victor. He succeeds M. F. (MARTY) BENNETT, who has been advanced to RCA's regional management staff.

Mr. Platt's entire business career has been devoted to theatre service and sales activities. Joining RCA in 1941, following schooling at the University of Pittsburgh, he was assigned to theatre service. He functioned in this capacity until 1948, except for service in the U. S. Navy during World War II. In 1948 he joined Midwest Theatre Supply, of Cincinnati. In 1949 Mr. Platt rejoined RCA as a theatre field sales representative. He is a member of the Variety Club and of the SMPTE.

Use of RCA's "400" 16-mm recorder-projector (IP for June, 1952, page 23) is explained and dramatized in a full-color, sound, 12-minute, 16-mm film entitled YOU ARE THE PRODUCER, available through RCA's Visual Products distributors or through the Engineering Products Department at Camden, N. J.

Ideal Pictures Corporation has issued a 32-page 1953 Entertainment catalog listing more than 1,000 16-mm sound films, including titles well-known in 35-mm entertainment, and a large number of free sponsored films. Copies of the catalog are available from any of Ideal's 27 local offices.

RCA Unveils Transistor Units

Audio amplifier, TV receivers, radio receivers, public address systems, adder and computer, record player and related items, all using transistors instead of vacuum tubes, are demonstrated to the press at RCA's laboratories at Princeton, N. J.

A SPEECH amplifier consisting of four transistors and no output transformer was among the more than a dozen items of electronic equipment recently demonstrated to electronics industry executives by RCA's David Sarnoff Research Center at Princeton, New Jersey.

A few of them are illustrated here. For example, the automobile radio chassis (seen in the hands of D. D. Holmes of the Center) operates directly from the car battery without any vibrator to produce high voltage. There are no tubes in it; it utilizes 11 transistors instead, and each of the transistors is a low-voltage device. The power inefficiency of the vibrator and associated circuits being eliminated, the drain imposed on the battery by this radio is only 10 percent of the usual automobile radio battery drain.

Improved Performance, Low Cost

Excellent quality in audio sound will assuredly cost less if the type of transistor-amplifier demonstrated at Princeton comes into general use, since the most expensive single component in the average high-quality amplifier is the output transformer. Inexpensive types of output transformers introduce distortion. The transistor-amplifier has no output transformer at all—unlike the vacuum tube, the transistor is a low-impedance device that can work directly into the loudspeaker voice coils. Circuitry of the amplifier demonstrated has not as yet

been revealed in detail, but it was stated to contain only four transistors and virtually nothing else.

The portable TV receiver pictured here contains no tubes except the 5-inch viewing tube. Transistors have been substituted for all the others. It weighs 27 pounds; receives an image at 5 miles with its built-in antenna, and at 15 miles with only a small "rabbit-ear" antenna.

The portable radio held by the model contains one tube, the converter, and otherwise only transistors. That is a transistor in the forceps the young lady in the illustration is holding. Owing to the fact that one tube is retained, reduction in battery size and weight, as compared with a standard portable radio, is only 66 percent.

Diverse Applications Cited

Other transistor devices unveiled included: a "walkie-lookie" or portable TV camera, a roving microphone, "wireless" record player, complete public address system, electrical ukelele, electrical piano, and electronic computing and adding equipment.

The "walkie-lookie" does not use all transistors, but uses 17 transistors plus a number of vacuum tubes. It therefore still retains much of its original size and weight. These are expected to be reduced still further by progressive substitution of transistors for tubes.

The roving microphone is a complete radio broadcasting unit (range 25 feet) about the size of a cigar. It contains two transistors, a battery, and a dynamic microphone.

Presages New Era in Sound

Using only one transistor, and a 1.35-volt battery, a similar arrangement "broadcasts" the sound of a record player for all of 24 inches distance: in other words, the record player is placed alongside or on top of a standard radio, and the radio will reproduce the record simply by tuning it to the transistor frequency.

A complete record player, portable, with built-in transistor amplifier, designed for the RCA 45-rpm discs, was also shown. It is powered by a 22½-volt battery which gives 75 hours of operation.

The public address system demonstrated had an output power of 1.4 watts through a 12-inch speaker. It also was driven by a 22½-volt battery, with operating life estimated at 25 to 50 hours.



Model holds portable radio receiver in which there is only one tube, all other tube functions being performed by transistors. Small size of transistors is indicated by the one in the forceps. Because there is still one tube in the circuitry, size and weight of the batteries used have been reduced only three-fold as compared with those needed for comparable all-tube receiver.

The toy "piano," operating on the principle of an electronic organ but with transistors instead of tubes, did not have a complete keyboard but only eight keys, serving, however, to demonstrate the general idea. The entire device is about the shape and size of eight piano keys. Two miniature 1.35-volt batteries operate it with an estimated service life for the batteries of 5,000 hours.

The electrical ukelele has a transistor amplifier, magnetic pickup, battery, and loudspeaker mounted within it; the speaker being located against the hole of the ukelele. Battery life is estimated at 10 hours.

A transistor counter capable of a million counting actions per second and a transistor adder performing up to 100,000 additions per second, were also demonstrated.

Influence in Many Fields

Among other items shown were an all-transistor portable radio (not the one pictured here, which still retains a single tube); an all-transistor portable FM radio; a partly-"transistorized" industrial or supervisory TV system; and a partly-"transistorized" home TV receiver with 17-inch viewing tube.

The portable, completely "transistorized" TV receiver shown in the accompanying illustration, fits into a case smaller than that of most portable type-



Laboratory staff members gather round their new all-transistor portable TV receiver. It measures approximately 1 x 1 x ½-foot, weighs 27 pounds, draws 14 watts from built-in batteries; has range of 15 miles with small antenna, 5 miles with built-in antenna. It contains no tubes except the 5-inch picture tube. RCA also displayed a home receiver, having a 17-inch picture tube, with some operating tubes and some transistors.

writers (approximately 1-foot x 1-foot x 6 inches). It weighs 27 pounds, contains 37 transistors, and has a power consumption of 14 watts.

The automobile receiver, illustrated herein in chassis form, is of the push-button type, utilizes 11 transistors, and delivers substantially standard automobile receiver volume. But it operates, as said, directly from the car battery, without the usual vibrator, power transformer and rectifier, and draws no more battery current than two dial lights.

None of this equipment is as yet on the market, and no announcement of when it will become commercially available has been made. RCA's Dr. E. W. Engstrom, vice-president in charge of the Laboratories Division, explains: "We



Tubeless automobile radio receiver in hands of RCA's D. D. Holmes operates directly from car battery without vibrator, transformer or rectifier, utilizes 11 transistors in place of tubes. It delivers normal car radio volume, imposes only one-tenth of normal drain on battery. Receiver has push-button tuning. Holmes holds one of the transistors. Note compactness of this tubeless chassis.

haven't yet worked out mass production techniques for transistors. . . . Thus, the cost of even those few types of transistors that are available in limited quantities is still high."

Dr. Engstrom, incidentally, does not expect transistors to replace tubes entirely. There will always be jobs tubes can do better, he believes, and he looks forward to mixed tube-and-transistor devices as well as to others using transistors only or tubes only.

According to Nathan D. Golden, Director of the Motion Picture and Photographic Products Division of the U. S. Department of Commerce, West Germany, including West Berlin, now has one movie seat for every 27 persons. Theatres number 4,547.

History of the American Labor Movement

Prepared by the United States Department of Labor for official use and reference, this history traces labor activity and legislation from Colonial times to today.

Chapter VI. The Labor Movement in 1950

AS IT exists today, organized labor in the United States is made up of more than 200 autonomous national and international unions. Most of these unions are affiliated with either the AFL or the CIO. A number of railroad and Government workers' unions, as well as a few others, have never become a part of a federated group. Several other unions have at various times belonged to either the AFL or CIO but have withdrawn or been expelled. All of these unaffiliated unions are commonly known as "independents."

As of September 1950, the Bureau of Labor Statistics had record of 208 national or international unions, of which 107 were affiliated with the AFL, and 30 with the CIO (after expulsion of all Communist-dominated unions), while 71 were independent. The number of local unions chartered by "parent" or national unions is estimated to be more than 70,000. Total membership of these unions is estimated to be between 14 and 16 million, including 675,000 Canadian members.

25% of Total Now Organized

In relation to the Nation's total labor force about one out of every four workers now belongs to a union. Union members, however, comprise more than 40% of that portion of the labor force in which unions have concentrated their organizing efforts. This portion excludes agricultural and domestic workers, the self-employed, and other smaller segments of the labor force which, at least until recently, were not susceptible to trade-union activities.

In addition to the locals which are chartered by their respective parent organizations, some local unions are directly affiliated with the AFL (federal labor unions) or with the CIO (local industrial unions). These directly affiliated locals are usually confined to trades and industries where no appropriate national union exists.

Chain of Command

Both the AFL and the CIO maintain city and State organizations with which their affiliated unions within the area are expected to join. At the beginning of 1950, the AFL had 50 State federations of labor, including Alaska and Puerto Rico, and 811 city centrals. The CIO reported 39 State industrial councils and 245 city and county councils.

Over-all policies of both the AFL and CIO are determined at the annual con-

ventions by delegates elected to represent constituent unions. Between conventions, authority is vested in elected officers and an executive body selected from affiliated unions. Affiliation with either the AFL or CIO is formalized by both organizations through issuance of "charters" outlining the affiliated union's jurisdiction, that is, the craft or class of workers, or industries, from which a union may recruit members and represent workers in collective-bargaining negotiations.

Unions are frequently described as *craft* or *industrial* unions, depending upon whether they seek to organize only specified skilled groups or all workers in an industry irrespective of their skills. Few American unions, however, now fall clearly within either of these two types. Many unions are better described as *amalgamated* or *multicraft* because they include two or more skilled or semi-skilled groups. Other unions are better classified as *semi-industrial* because, although they may include all production workers within an industry, they frequently exclude certain maintenance, technical, or clerical groups.

Generally, most AFL unions tend toward the craft or multicraft type (e. g., the International Plate Printers, Die Stammers and Engravers' Union, and the Brotherhood of Painters, Decorators and Paperhangers); while most CIO unions are more readily classified as industrial or semi-industrial (e. g., the United Steelworkers, the United Automobile, Aircraft and Agricultural Implement Workers, and the Transport Workers Union).

AFL Departmental Setup

To coordinate the common interests of many crafts, the AFL has established four "departments," each composed of a group of international unions with common interests in certain industries. Thus, the Building and Construction Trades Department has 19 affiliated international unions; the Metal Trades Department, 14 unions; the Railway Employees' Department, 6 unions; and the Maritime Trades Department (established in 1946) 5 unions. Several unions are members of more than one of these departments.

Each of the AFL departments holds separate conventions, and functions through subordinate bodies organized on a local, State, district, or, in the case of

the railway shopcrafts, on a "system" basis.

Unlike other departments, the Union Label Trades Department, the fifth in the AFL, is composed of 56 affiliated unions maintaining union labels or insignia. This department is designed to encourage union organization and higher standards of workmanship through appeal to consumers to buy union-made goods or services.

Collecting Bargaining Process

No similar department exists in the CIO, although matters of common con-

cern are frequently handled through its regular and special committees.

Collective bargaining is an orderly procedure whereby representatives of workers meet with representatives of employers to negotiate or "bargain" over the terms of a contract designed to govern their working relations. The results of the bargaining are set forth in a written agreement, signed by representatives of the union and the employer. This agreement specifies the terms of employment and conditions of work, provides guarantees against arbitrary discharge, and sets up machinery for cooperation in

applying the terms and meeting the problems arising out of the agreement.

It is estimated that over 100,000 such agreements are currently in effect, and that at least 15 million workers are directly covered by them.

Agreements vary widely. Some are narrowly restricted to matters of wages, hours, and working conditions. Others provide for the joint administration of health, welfare, and pension plans; job evaluation and merit rating schemes; production bonus arrangements; and joint efforts to increase production and decrease costs.

[TO BE CONTINUED]

16 - m m

BECAUSE EXPANSION OF 16-mm ACTIVITY PROVIDES INCREASING FIELDS OF EMPLOYMENT FOR SKILLED PROFESSIONAL PROJECTIONISTS IN TV STUDIO AND NON-THEATRICAL SHOWINGS, AS WELL AS ENHANCED POSSIBILITIES OF PERSONAL BUSINESS VENTURES. THIS 16-mm DEPARTMENT OF IP WILL APPEAR MONTHLY.

Outline of 16-mm Projections

Presenting some comments on the history and operation of 16-mm projectors, abstracted from a very complete text-book on the subject.*

AS THE TECHNOLOGY of the motion picture advanced from its enthusiastic yet humble beginnings, it was only natural to expect manufacturers of films and equipment to attempt to reduce costs to the point where films would be practicable for amateur and personal movies—enlarging the scope of motion pictures tremendously. One of the early steps taken to satisfy that desire was the manufacture of smaller film, arbitrarily selected at 16 millimeters.

It was not until 1924, however, that the big step in making films really suitable for the amateur was made when the Eastman Kodak Company introduced reversal film on the 16-mm market. Prior to that time, all motion pictures—whether 35-mm or 16-mm—required two strips of raw film to produce the single strip used in the projector. When developed, the exposed original film provided a negative image that was dark in the bright portions of the scene and light in the dark portions. In order to obtain a positive image suitable for projection, a copy had to be made on a

second strip of film, with the bright portions of the scene light and the dark portions dark. The process is quite similar to that used for film from simple still cameras.

Reversal Film

Obviously, if the original film could be developed directly into a positive image suitable for projection, the amount of raw film required would be cut in half, and the printing and the second developing operations eliminated. Reversal film processing accomplishes just this, and is today used almost exclusively for black-and-white original film of 16-mm and all lesser widths. This type of film is still unknown as an original in the 35-mm width; all such original film is negative—just as it was some fifty years ago when motion pictures were born.

Common Film Sizes

As time passed, attempts were made to broaden the market by reducing the cost of amateur motion pictures till further. In the United States, 8-mm film provided the answer; it was first introduced by Eastman Kodak in about

1934. Further, 17.5-mm, made by splitting 35-mm in two, found a few specialized uses; original sound recording for Hollywood films was one example.

In France, 9.5-mm film had been introduced somewhat earlier, for educational as well as amateur purposes, and proved a strong competitor of 16-mm in popularity. Later, 9.5-mm equipment and films were imported into England, but have become of lesser importance since the early part of World War II. Since 9.5-mm did not make headway in the United States, it is unlikely that it will become a major factor now.

Only 35-mm, 16-mm, and 8-mm need be given serious consideration for the future, since any other possible film width subsequently proposed for standardization will need a very strong case for adoption before it can be seriously considered.

Films larger than 35-mm were run in theatres for a limited period about 1930; among the better known were the 62-mm (RKO Spoor-Berggren), 65-mm (Paramount-LaPort), and 70-mm (Fox-Grandeur). None of these widths was standardized, and since 1933 none has been used commercially to any extent. It is interesting to note that these larger sizes had different aspect ratios, since a wider picture in comparison with picture height was considered desirable.

16-mm Sound-Recording

When sound was introduced commercially into films in 1928 and 1929,

*Cond. from "16-mm Sound Motion Pictures," by W. H. Offenbauster, Jr., published by Interscience Publishers, Inc., New York.

it regenerated the motion picture industry and caused very rapid expansion and technical growth. At that time, sound recording equipment was used almost exclusively for 35-mm film, in view of unsuccessful earlier attempts at commercial recording directly on 16-mm film. Within a few years, 16-mm sound prints were being made commercially by optical reduction from 35-mm negatives (a picture negative for the picture original, and a sound negative for the sound original), and commercial entertainment pictures thus became available in the 16-mm film with.

One of the earliest 16-mm sound projectors was designed by R. P. May of RCA in 1930. It was compact, light, and gave surprisingly good performance in comparison with the 35-mm portable sound projectors marketed at the time. Almost a decade passed before the performance of this machine was surpassed.

With the availability of such films and projectors in the 16-mm size, amateur and other non-theatrical film users began to think in terms of sound films rather than silent films, and a potential demand was created for 16-mm sound recording equipment.

Sound Quality Improved

During the period from 1932 to 1936, 16-mm sound-recording equipment was marketed, but the quantity was small, and its usefulness handicapped by poor quality of the projected pictures and sound, which did not compare at all favorably with the quality of pictures seen at local theatres.

During this same period, the edge had worn off the novelty of sound in the 35-mm entertainment motion picture theatre, and serious efforts were made to improve the technical quality of both image and sound. It was then that "wide range" and "high fidelity" became by-words for sound, and improvement was seen in all phases of recording and reproduction. By the end of 1936 there was a fair degree of consistency in the technical quality of entertainment films shown in 35-mm movie houses.

From 1936 onward there was a period of further improvement in 35-mm films, and of both improvement and rapid growth in 16-mm films. When new developments in films or apparatus occurred in 35-mm film technique, it was not long before the same were adapted (where suitable) to 16-mm

films and vice versa—each size exerting a strong technical influence upon the other.

16-mm Color

The presence of Kodachrome for motion pictures in the 16-film width and its equally notable absence in the 35-mm film width provided further impetus to an already interested and active industrial and educational motion picture market. This market began to demand color duplicates—with sound.

Kodachrome made it possible to "shoot" in color and make a small number of copies at very low cost (when compared with available 35-mm methods, such as Technicolor). No special camera was needed, no special camera crew, and no long contract negotiations were required to obtain a desired color film. It was necessary merely to use Kodachrome in a good 16-mm camera to obtain the picture, with sound recorded in much the usual manner. The technological millenium of color and sound in educational films as envisioned by Edison had become a reality within but 50 years of the birth of the motion picture itself.

World War I had seen the use of motion pictures to some degree by every large nation of the world. The amount of 35-mm film used for record purposes ran into millions of feet. The United States Army had prepared 52 reels of a series called "Training of the Soldier" and about 13 reels called "Elements of the Automobile." The Germans had their films too; it was remarked by one German general that in modern warfare the nation with the most complete photographic intelligence would be the likely victor. Even at that early time films were made for propaganda purposes (Germany and Russia) as well as for training.

When World War II arrived, the motion picture, in principle, had been accepted as a training tool, although the amount of material available was quite limited. The United States Army, Navy, and Air Forces had chosen 16-mm as the width best suited to their needs. Since there was a large quantity of 35-mm production equipment available such as cameras, sound recorders, editing equipment, etc., and a relatively large pool of personnel trained to handle this equipment, it was logical to assign to 35-mm the major part of the production burden. The 16-mm projection prints were obtained from the 35-mm films through optical reduction from special picture and sound dupli-

cates copied from the edited negatives.

The volume of 16-mm prints made for training and similar purposes in World War II was measured in millions of feet *per day*. Such wide use resulted in even greater and more insistent demands for better technical quality in the projected films. In order to meet these demands, much technological improvement was needed in every stage of the process. As each improvement was made, it was crystallized into an American War Standard wherever possible. Standardization is being continued as a normal peacetime activity, and its accumulated effects cannot help but be felt throughout the world in the form of more and better films for more people—and at a lower cost.

[TO BE CONTINUED]

OBITUARIES

Earl R. Frank, 63, member of Local 228, Toledo, Ohio, died January 5 after a brief illness. He joined Local 386, Columbus, Ohio on September 9, 1915, and two years later transferred to the Toledo Local. Earl Frank was Toledo's first commercial radio station owner, operating a 10-watt broadcasting station back in 1921 under the letters WTAL. He later sold WTAL and confined his efforts to motion picture projection.

Joseph Canick, member of Chicago Local 110, died recently at the age of 61. Until the time of his death he worked in the projection room of the Palace Theatre.

Charles Andrews, 67, member of Toronto Local 173, succumbed to a heart attack on January 7 last while trying to move his car from the parking lot back of the Eglinton Theatre, where he worked as projectionist. Andrews was born in Orangeville, Ont., and was a member of the Toronto Local for the past 32 years. He served on the Local's sick committee, was a member of the American Projection Society, and of the Queen City Masonic Order.

Arthur Barber, 65, member of Toronto Local 173 for the past 35 years, died suddenly at his home on January 16. He was a veteran of World War I, and was a member of the Famous Players 25-Year Club.

John A. Granquist, 54, member of Local 286, Des Moines, Iowa, was stricken with a fatal heart attack on January 16. Granquist was secretary of the Local for a number of years and for the past ten years served on the executive board and on the board of trustees. He worked in the projection room of the RKO Orpheum Theatre in Des Moines. One of his brothers, Clarence, is also a member of Local 286.

Murray C. Trefry, veteran member of Local 680, Halifax, N. S., died early last month. Trefrey was one of the pioneer motion picture projectionists in Nova Scotia.

THREE-D PROJECTION: PROGRESS REPORT

(Continued from page 10)

lever. Frame only one machine, using the other projector as the pilot.

'Convergence' and its Import

It is believed that in the near future all 3D will be photographed using "convergence", which means simply that somewhere in each scene both pictures will be superimposed, appearing as one. Photographically, convergence is rather simple. It is controlled by the interocular separation of the camera lenses.

For example: a long shot would be photographed with a camera lens separation of up to 4 inches. As we move in for medium shots and/or closeups, our camera lenses are brought closer together. Closeups will be photographed with these lenses as close as 1½ inch. This is done to control the over or under emphasis on depth.

In a very short time we should take this procedure in stride much the same as we do now when focusing a projector. We recognize diffusion and effects now and they help us keep our pictures sharp on the screen. By the same token, we will recognize "convergence" and therefore have a tool to help us check our picture placement while the show is on.

While we're talking of the picture, let's say a word about focusing a 2-film, 3D picture. Naturally, both pictures must be focused individually. This can be accomplished by closing one eye at a time and focusing one picture at a time. If we have trouble closing one eye at a time, we can make a tool that will simplify the whole procedure. Take two pair of Polaroid glasses and (using grease pencil), mark X's on the left glasses and O's on the right glasses. Trade an X and an O. You will then have two X's (left) in one pair of spectacles and two O's (right) in the other. Place them by their respective projectors and use them *only* for focusing. You will only see one picture with each pair of glasses.

Accessory Equipment

F. REELS MAGAZINES, REWINDS: Using two projectors simultaneously forces us to change our procedure with respect to putting on the show. Changeovers are eliminated unless we have four projectors. As stated in IP last

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month, the showings today are presented in 55-minute segments with intermissions. Utilized are 5000-foot, 23-inch reels and 24-inch magazines. In some theatres with an exceptional projection angle, wedges have been used to tilt the upper magazines away from the front wall and the lower magazines



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from the bases. In cases where dimmer controls, conduits, etc., interfere, this is not possible. The only alternative is to move the projectors back (with attendant modifications—masking, ports, etc.) or go to a smaller reel.

Use of a 20-inch reel in a 21-inch magazine has been suggested; also a 17½-inch reel in a 19" magazine; also a 16½-inch reel which can be used in most present 18-inch magazines. (The 18" magazines with the fire trap mounted inside the case will not take this reel.) The frequency of intermissions will be increased with the smaller reels. Even though the 55-minute intermission intervals seem to be welcome, there are grave doubts in most quarters as to the advisability of decreasing those intervals.

Thickness of film stock is also an item. Black-and-white will vary from 0.0058 inch in thickness to 0.0060 inch. Color from 0.0062 inch to 0.0068 inch. Some 2780 feet of black-and-white can be mounted on a 16½-inch reel as against 2420 feet of Ansco Color. If all this would tend to indicate that confusion exists in the release plans of the majors, it would indicate correctly.

For the first few pictures we will probably receive them in a hodge-podge of lengths. We hope for a standard release length in the very near future.

Takeup Trouble Licked

Takeup trouble was experienced in the first few screenings with the 5000-foot reels. Replacement of the friction type with the X-L type takeup has eliminated this problem. Rewinds will have to be modified: 5000-foot electrics are available and hand rewinds can be modified by blocking up.

This brings us up to date as of February 1 this year. Time and date are specified because changes will undoubtedly take place within the next 24 hours. The writer is looking forward to bringing those changes to your attention next month.

[TO BE CONTINUED]

Kodak Achieves f/0.75 Lens

Eastman Kodak Company announces that it has completed design of an f/0.75 cine lens. This is eight times as fast as the f/2.0 lenses commonly used in motion picture projection. It is intended for taking motion pictures of fluorescent screens, as in television picture tubes; and gives "acceptable definition" of a 12-inch diameter object on a standard silent 35-mm motion picture frame. Focal length is 110-mm; price about \$3,000.

Westrex Executive Changes: Warn, Allinsmith Named V-P's

H. B. Allinsmith, formerly managing director of Western Electric Company, Ltd., London, has been elected a director and vice-president of Westrex Corp., New York, effective on March 1. He will take over the duties of D. C. Collins, vice-president, who will retire on February 28.

R. E. Warn, manager of Westrex Corp.'s Hollywood Division, has been elected a vice-president of Westrex, effective March 1. He is also president of Sound Services, Inc., Hollywood.

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THEATRE SOUND REPRODUCERS

(Continued from page 18)

not be flame-polished because diamond, being a form of carbon, burns.

Specific Type Needle Required

Osmium-iridium and other "high atomic-weight" metal-point needles, although costing less than half the price of a good sapphire stylus, do not last nearly so long. Moreover, metal stylus points readily develop rough spots and scratches which exert a scouring action upon the record grooves.

Whatever the point may be made of, the correct size of needle should be used for the different types of records—standard 78 RPM, "Long-Playing 33-1/3 RPM, and 45 RPM. *The grooves of these three types are differently dimensioned.* Many of the newer crystal pickups have turret needle holders which enable the right needle to be brought into playing position by a flick of the finger.

Most theatres employ standard 78 RPM disk records for music because a wider variety of musical selections is available on them. In fact, the number of 78's manufactured is greater than that of all other speeds combined, and it is expected that this state of affairs will continue for several more years. The newer speeds have several important advantages; but well-made plastic 78's are still tops for sound quality, in the opinion of experts.

Sapphire Points Recommended

The needles that give the best results with the conventional crystal-type pickup for standard-groove, lateral-cut disks are sapphire-point needles having a bent shank. The offset construction is vital to better weight-distribution of the tone-arm, and it also eliminates needle-chatter and much of the surface noise. The shape and thickness of the shank are designed to reduce response "peaks" which would result in unnaturally shrill sound. These needles are rated at 10,000 plays—which means that they are good for about 500 plays before the critical listener can detect distortion due to a worn needle. In sound-systems having filter circuits which cut off disk-reproducer response below 4,000 cps, the "10,000-play" needle is good for at least 1,000 to 2,000 plays.

If the standard crystal cartridge used is of the type furnished with both a

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set-screw and an optional thumbscrew (the latter intended for use when ordinary needles requiring frequent changing are employed), needle-scratch and shrill soprano tones may be further reduced by using the long thumbscrew to hold the 10,000-play (?) sapphire stylus in the cartridge. The thumbscrew, being heavier than the short set-screw, has sufficient mass to provide a desirable mechanical impedance.

Sound-on-disk, like sound-on-film,

may suffer from flutter, gargle, etc. A piano recording is useful for detecting traces of wows and flutter in the revolving turntable. Gargle reveals itself mostly in the tenor, alto, and soprano regions of the sound spectrum. "Whiskers," caused by extremely rapid variations in turntable speed (often caused by vibration transmitted from a loosely mounted motor), does not affect the bass and tenor notes at all, but makes the higher treble tones, such as those of the violin, sound raspy.

Most of these defects can be corrected by overhauling, cleaning, and adjusting the motor and turntable assembly. The projectionist should not expect satisfactory disk reproduction if the motor and its reduction gears are worn, if the assembly is loose or improperly mounted on the motor-board, or if the pickup is so mounted that it does not track the record-grooves tangentially.

Correct Turntable Speed

Correct turntable speed is a mighty important matter. While a discrepancy of 2 or 3 revolutions per minute in 78 RPM turntables will not noticeably harm the quality of the recorded music, it is better to have the speed exact. Turntable speed can be checked by a projecting slip of paper placed under a record on the turntable. Using a pocket-watch having a second-hand for timing, count the number of times the slip of paper brushes against one hand placed close to the turntable during a one-minute period. Stroboscope disks accurate to a few revolutions per minute may also be used.

Badly worn records should not be played in the theatre because they make a poor impression upon the audience.

If patrons get the idea that the theatre is so poorly managed that new records of good quality cannot be afforded, won't they begin at once to look for other symptoms of cheapness? While it is entirely possible that they will find what they look for, no profitable purpose is served by offering them an open invitation to do so.

[TO BE CONTINUED]

Preserving Our History

England, France, Italy, Denmark, Belgium, Czechoslovakia and Switzerland are now collecting and preserving pioneer and historical motion picture films, according to *Image*, the Journal of Photography of the George Eastman House; while in the U. S. the George Eastman House, the Museum of Modern Art, and the Henry Strong Collection of Historical Motion Pictures are engaged in the same activity. Letters and documents, in addition to original negatives and surviving prints, are also being preserved. And still a great deal of irreplaceable material dealing with the childhood of the industry is being irretrievably lost, *Image* laments.

Psychological Films Catalogue

Motion picture films that deal with psychological subjects and mental health have been catalogued by the U. S. Health Staff Institute. The catalogue does not include all such films available, but only those that have been reviewed and approved by at least three or more members of the Institute staff. A copy can be obtained for 30 cents from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

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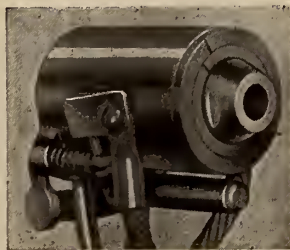
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Strong Electric Announces New 3-D Projection Lighting Equipment

By ARTHUR HATCH, Engineering Vice-President, Strong Electric Corp.

THE sudden and intense interest of exhibitors in 3-D pictures has resulted in a rush to convert projection equipment for this type of presentation. In many instances, the exhibitor has not realized the limitations of his projection lamps and arc power supply sets because his main interest has been drawn to the unusual necessities of most of the new 3-D systems—coupling of the projectors, Polaroid filters and glasses, and non-diffusing screens—to say nothing of the actual booking of such 3-D features.

Most of the many systems of third-dimension picture projection call for simultaneous operation of two or more projectors and projection arclamps.

In these systems, since both projectors run simultaneously, the conventional changeover is impossible unless four or more projectors are used. To make this duplication of equipment unnecessary, reel sizes have been increased to accommodate up to 5,000 feet, so that ordinarily only one intermission is necessary during the average feature.

Increased Burning Time

This increase in reel size demands lamphouses with a burning time of at least 58 minutes without retrimming to permit the 50-minute running time, the 2-minute burning-in time, and a 10% safety factor. Most projection arclamps in use now were designed to project only two double reels without retrimming, and they cannot be used for 3-D presentations without 2 or 3 intermissions during a feature—a highly undesirable condition.

The second consideration with regard to projection lamps is not as obvious as the first. It concerns the increase in illumination from the lamphouse, which is necessary to overcome the losses introduced by the filter at the projector and the glasses worn by the viewer.

Although both projectors operate simultaneously and the projected pictures are superimposed, one over the other on the screen, only one picture is seen by each eye. Hence, since the visual sensation of brightness as sensed by one eye is not additive to that sensed by the other eye, the brightness value from both projected images is only equal to the brightness of one image.

Screen Brightness Way Down

Moreover, the light from these projectors has been reduced to approximately 50% by the filter at the projector before it hits the screen. It is true that the non-diffusing type of screen does somewhat increase the apparent brightness to the

viewer, but the net effect is offset by the approximately 15% loss in the glasses worn by the viewer, and the general trend toward a larger screen size for 3-D to overcome the size-reduction illusion.

As a rule of thumb, the net brightness to the viewer for 3-D projection will be approximately 40% of the brightness formerly obtained on two-dimension pictures with the same projection lamp light delivery.

Strong Electric Corp. in announcing its new projection arc lamp catalog 90,000-8 (3-D) at this early date, has again demonstrated its policy of keeping abreast of new developments and of being able to furnish equipment for any projection lighting need.

The new Strong 90,000-8 (3-D) projection arclamp, designed especially for the requirements of 3-D projection, accommodates a 20-inch trim of carbons which will burn continuously for a full hour at 78 amperes (using 9-mm positive and 5/16" negative) or at 95 amperes (using 10-mm positive and 11/32" negative).

Automatic Crater Positioning

The position of the positive arc crater in the Strong 90,000-8 (3-D) is automatically maintained at the exact focal point of the reflector by means of the exclusive Lightronic crater positioning system. The positive and negative carbons are advanced by separate motors, the speeds of which are governed by the Bi-metal Lightronic Tube. Once the arc has been struck, the crater positioning and the gap length are automatically maintained without manual adjustment.

This feature is important in 3-D projection because with the long-burning

period it is virtually impossible to maintain the position of the crater exactly at the focal point of the reflector without frequent manual corrections, unless an automatic positioning system is built into the lamphouse.

The Optical System

The optical system comprises an elliptical reflector 16½-inch in diameter with a resultant speed of F:1.9 to match the currently available high-speed F:1.9 projection lens. The mirror and its tilting mechanism are an integral part of the back door of the lamphouse, which swings out to allow easy cleaning of the reflector and convenient trimming of the lamp.

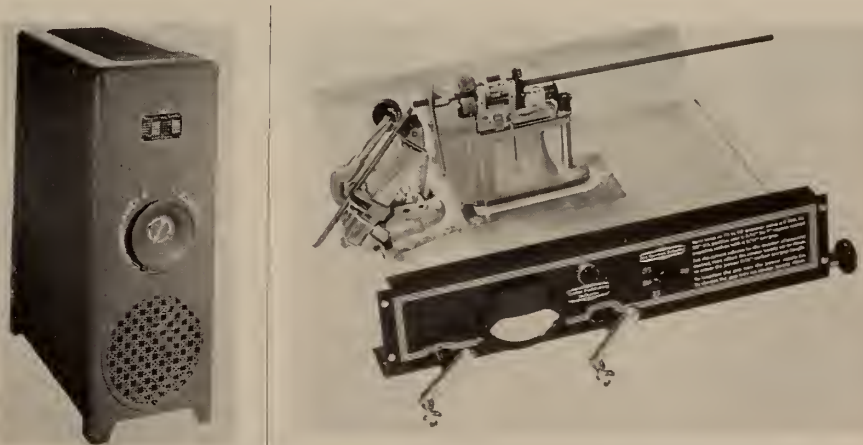
The Strong 90,000-8 (3-D) features unit construction whereby the various components are instantly removable for cleaning and inspection. The lamphouse is finished in attractive gray wrinkle with chrome trim and weighs 165 pounds. There is an arc imager, an ammeter for reading the current at the arc, an automatic trimming and framing light, and an inside dowser system.

A rectifier or generator burn-out will be the first indication to many exhibitors that they have overlooked a very important factor in converting to 3-D pictures.

Power Supply Requisites

Almost without exception, present rectifiers in use for 35-mm projection arc supplies are designed to withstand operation for 20-minute "on," 20-minute "off" cycles only. The intermittent "off" cooling period is necessary to avoid temperatures within the equipment which will damage and break down the electrical insulation, and result in a burn-out.

Generators likewise are designed for use under the present projection practice of dual operation only for a 3- to 5-minute period each 20 minutes. Operation of two lamps from one generator for lengthy and repeated periods will cause overheating



TWO VITAL UNITS IN STRONG ELECTRIC CORP. 3-D LIGHTING EQUIPMENT

Left: The 95,008 (3-D) rectifier. Right: The burner mechanism of the 90,000-8 (3-D) H. I. arclamp. Strong Elec. Corp. meets the 3-D challenge.

of this type of equipment, and consequent burn-out.

Many exhibitors will learn, to their sorrow, that although their present arc power supply equipment will deliver the required power for the extended periods as required, the cumulative effects of the resultant overheating will result in failure.

Furthermore, this failure may not occur in days or weeks, but perhaps in several months. Failures of this type will certainly not be covered by any manufacturer's guarantee, and the exhibitor will have to bear the cost of repairs or new equipment, plus the loss of a few show-

ings inasmuch as there is no chance of limping along on one projector with 3-D systems.

New Heavy-Duty Rectifier

Strong again moves to the fore with the announcement of a continuous-duty rectifier, catalog 95008 (3-D), companion to the 90,000-8 (3-D) lamp for 3-D projection arc supply.

This new rectifier will meet the requirements for 3-D projection under continuous-duty cycles for current ranges of 75-85 amperes when using a 9-mm bare positive carbon in an agle trim lamp. Transformer taps provide adjustment to

compensate for supply voltage variations through a range of 10% above or 10% below the rated A.C. input voltage throughout the output rating range.

The complete electrical and mechanical assembly consists of three transformers, six tube sockets and manually-operated output control handle which actuates the 8-point rotary switches that are employed to increase or decrease the output power even when the arc is burning.

High-Power Rectifiers

Higher-power 3-D rectifiers for use with lamps burning 10-mm carbons are also in production and will be available for early delivery by Strong.

Strong Electric Corp. also announces the establishment of a special department to handle the problems of exhibitors and equipment-supply dealers in connection with 3-D lighting and power problems. They will be glad to assist to the extent of their specialization in their field if a problem is outlined for them.

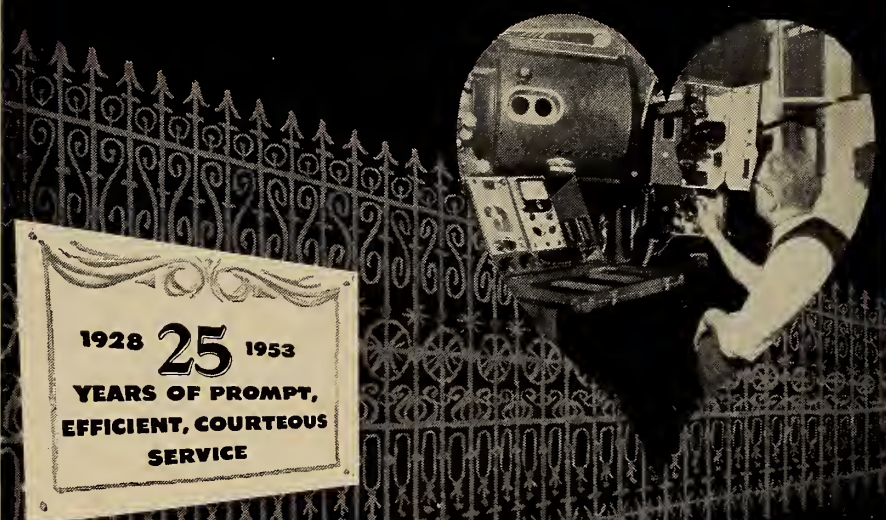
End of 16-mm Film Listings

The series of listings under the title "Local Sources of 16-mm Films" which have been appearing in recent issues of IP has been terminated effective with the last (January 1953) issue. These data, arranged alphabetically by states and cities, are available in a much more compact and handy form in Bulletin 1951, No. 11 ("A Directory of 2002 16-mm Film Libraries") through the Federal Security Agency, Office of Education. Address the Supt. of Documents, U. S. Govt. Printing Office, Washington 25, D. C. The price is 30 cents.

Golden Heads Merged NPA Divisions

Consolidation of two industry divisions—Motion Picture and Photographic Products, and Scientific and Technical Equipment—was announced today by the NPA, U. S. Department of Commerce, Nat Golden, who has handled the film division since its inception in 1951, will direct the combined division.

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101. Ansco Color Film

(Continued from page 19)

camera printing apparatus, but also, in large measure on the skill of the operator.

The focus of the optical-printer lens is extremely critical; and exposure requirements are somewhat different from those obtaining in contact printing because the specular densities (of separation—positive emulsions) are generally 25% to 35% higher than the diffuse densities, resulting in a higher contrast-factor ("gamma").

Color-Balance Factors

Faulty color-balance in Ansco Color and similar color films is nearly always due to faulty processing and printing. Color control is vitally important, an instrument to be wielded only by an expert hand and a sympathetic mind. True, the emotional element is largely absent from non-dramatic films; but a first-rate color man would not have passed on to you films grossly unbalanced in color tone. No matter how bad the photography may have been, he would have remedied the defect. He knows how to do it.

Monopack color films such as Ektachrome and Ansco Color are entirely capable of providing excellent rendition of the full scale of color throughout a wide range of hue saturation and brightness. Ansco Color is noteworthy for its very wide latitude—capturing detail in deep shadows and highlights alike—and for its ability to reproduce with fidelity the yellow-greens and non-spectral

purples and magentas, the most difficult of all colors to photograph.

I cannot overemphasize the importance of color control during the processing and printing of color films. Needless to say, the varying degrees of exposure inevitable in camera negatives filmed under varying conditions of illumination require control measures for regulating density as well as for color compensation. Control is critical in all color work, but not more so for Ansco Color.

Two Wide-Latitude Negatives

There are at present two low-contrast, wide latitude Ansco Color negative materials available. These are the Type 843 daylight-balanced 35-mm film and the Type 844 tungsten-balanced 35-mm film. The 16-mm negative films corresponding to these are the Types 243 and 244. Filters are available for use when shooting under lighting conditions that differ markedly from the color-temperature norms established for the two negative emulsions.

Color-balance difficulties may be experienced when making black-and-white separation positives from color negatives, or when making color dupe negatives from the separation positives, if it happens that the spectral characteristics of the red, green, and indigo filters employed are at variance with the spectral characteristics of the color films.

In the interest of best definition, neither glass nor gelatine filters should be placed in the image-forming beam, that is, they should not be interposed between the film in the projector of an optical printer and the film in the camera.

The sensitivity peaks of Ansco Color films are approximately 675, 550, and 450 millimicrons for red, green, and indigo, respectively. The absorption "peaks" (or, rather, "dips") for the Ansco Color cyan, magenta, and yellow dyes are, respectively, 670, 540, and 440 millimicrons. A comparison of these figures with the trichromatic data for the "standard observer," given in all editions of *The*

Handbook of Chemistry and Physics (Chemical Rubber Publishing Co., Cleveland, Ohio), will supply ample evidence that the characteristics of Ansco Color make for high-fidelity color photography and reproduction.

Color-Balance Adjustment

Color balance may be adjusted during the printing of projection positives by using tinted filters for scene-to-scene corrections. Regular "travelling-matte" printers make possible the correction of



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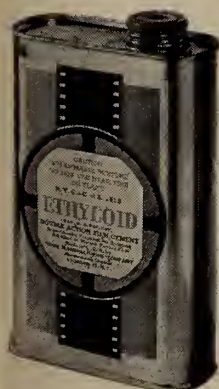
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both density and color-balance simultaneously. This was described in my article on Ansco. There are also special color-film printers employing a red-green-indigo trichromatic illuminant, the relative intensity of the three primary components being adjustable.

Color rendition can be very seriously harmed by carelessness in developing Ansco Color film. The chemicals used should be those specified by the manufacturer of the film. All solutions should be fresh and of the proper concentration. And in the case of Ansco Color processing, the color developer should be kept within $\frac{1}{2}^{\circ}\text{F}$ of the specified operating temperature, which is normally 68°F (20°C). The other solutions should be kept to within 2°F of the developer temperature. Formulas for the various solutions are obtainable from Ansco, Binghamton, N. Y.

Film Storage Requisites

Ansco Color raw-stock should be stored at temperatures not exceeding 70°F , the optimum range being 40° to 50°F . The relative humidity of the storage vault should come within the optimum range 35% to 45%. The taped raw-stock container should be placed at loading-room conditions at least 2 hours before opening. This precaution prevents moisture from condensing on the film.

During the interval between exposure and processing, the film should be stored under these same conditions. If the interval before processing is longer than 48 hours, the exposed film should be kept at a temperature of 35°F or less to stabilize the latent image.

Where tropical conditions prevail, exposed film should be immediately desiccated and placed in a sealed, dessicated container for prompt shipment to the processing laboratory. The sealed container should be kept under refrigeration if the interval before processing is extended beyond 48 hours.

The temperature and humidity conditions recommended for the Ansco Color raw-stock are favorable for the storage of the processed Ansco Color film.

Close adherence to these recommendations insures against any deterioration of color values, latent or otherwise, which might be induced by local conditions. These requirements are not unusual: they correspond with those recommended in the paper "Air Conditioning in Storing and Handling Motion Picture Film" by J. M. Calhoun (Eastman Kodak Co.) for the storage of ordinary black-and-white safety film.

I suggest that you catch the M-G-M Ansco Color production "Vaquero" when it comes your way. It will show Ansco Color at its professional best—and also give you an idea of how your Ansco Color

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training films *ought* to look. Because there is no possibility for poor image-definition to arise in Ansco Color film, as far as the film itself is concerned, and because poor color-balance means improper printing and processing procedures, I am forced to conclude that inexperienced laboratory work lies at the bottom of your troubles with Ansco Color.

MONTHLY CHAT

(Continued from page 5)

factorer has been asked to make such a lens or has made plans on its own for so doing.

How much reflected light does 20th-Fox expect to get with Cinemascope projection? One of our scouts who viewed the process in Hollywood reports that the invited audience sat in total darkness for ten minutes immediately preceding the showing, but a check made during the running showed a reflected light level of 6 ft.-lamberts. This compares with the present standard of 15 ft.-lamberts.

Of course, 20th-Fox may have something up its sleeve that will raise this light level considerably, possibly the Ventarc of Dr. Edgar Gretener of Switzerland, with whom 20th-Fox was in close contact when negotiating for the Eidophor theatre Tv system. We shall see. (See references at the end of this article.)

On one other point IP has no uncertainty—that the time has long since passed when our screen proportions should have been changed. The present standard 3 x 4 proportion has existed practically since the inception of motion pictures and has long since been outmoded. We're not ready to buy the $2\frac{1}{2}$ to 1 proportion now being bandied about by the wide-screen boys, but it would seem that a 2 to 1 ratio might fill the bill. This is a job the SMPTE should do pronto.

As a matter of fact, the present situation with respect to these various processes (big screen and 3-D) cries aloud for standardization all along the line—a job that should have the benefit of the best talent from both the technical and business groups in the industry. If things run along as they now are, there's going to be one unholy mess on both the production and exhibition fronts.

Whatever happens, the industry projection-wise is practically right back where it started. The projectionist is definitely Mr. Big today, and he certainly is the man who can make or break a show.

The most pressing need at the moment

with any of the processes being readied is the urgent—nay, acute—need for much more light and improved optics. Let's not forget that with 3-D we have an automatic 50% light loss due to the projector filters, plus, probably, a 15% additional loss via the viewing spectacles. The answer would seem to be to pour on the light—but we must have it available before we can use it. Manufacturers of carbons, optics, lamphouses, and projectors should huddle immediately and go all out on this problem of increased light. Vastly improved cooling means are a *must*, not sometime in the future but *now*.

J. J. F.

The Ivanov (Russian) system of stereoscopy was discussed in IP for April, 1941 (p. 12); December, 1947 (p. 17); April, 1948 (p. 29), and August, 1949 (p. 13).

"Cinerama: Super-Movies of the Future"; IP for November, 1950 (p. 10).

"Stereoscopic Motion Pictures," by J. A. Norling; IP for August, 1951 (p. 12); February, 1952 (p. 9); March, 1952 (p. 20).

"Three-Dimensional Projection in Europe," IP for April, 1952 (p. 9).

"The Ventarc H. I. Carbon 'Blown' Arc: A New Concept," by Dr. Edgar Gretener; IP for July, 1950 (p. 13).

"Uniform Screen Light Distribution: Elliptical Reflector Mirror"—A Symposium, by Dr. Edgar Gretener, Robert A. Mitchell, Sam Glauber; IP for September, 1950 (p. 13).

BERT SANFORD—A FRIEND

Bert Sanford, 60, tried and true friend of projectionists, collapsed and died Feb. 12 at Broadway & 47th St., N. Y. City. He was within sight in his last moments of the thoroughfare to which he had contributed so much. Sanford, in semi-retirement was a member of the Motion Picture Pioneers, the New York Variety Tent, and the 25-30 Club of N. Y. City projectionists. Sanford's first association with the industry was an actor in the D. W. Griffith productions for Biograph. He was with General Film Co. from 1912 to 1917, first as booker, later as assistant exchange manager.

An Industry Pioneer

For years he served as booker and salesman for Pathe. In 1929 he joined Electrical Research Products as sound equipment salesman. Two years later he was made manager of merchandise sales, becoming Northeastern Division sales manager in 1933. In 1937 he joined Altec Service Corp. as Eastern district manager. He was made theatrical sales manager of Altec Lansing and Altec Service in 1946. In 1949 he became identified with the ABC Vending Corp. as general sales manager. Last year he took over operation of the State Theatre in Trenton, N. J.

Removal of price controls over theatre admissions in West Germany last April did not result in any significant increase in the price of tickets, the U. S. Department of Commerce reported in November.

India has 2,700 motion picture theatres and 800 touring exhibitors, according to a report submitted by the U. S. Consulate at Bombay. Total capacity is estimated at slightly over $1\frac{1}{2}$ million and daily attendance at 2 millions.

He Asked Permission to Stay

Major William E. Barber, USMC

Medal of Honor



IT WAS DURING the Chosin Reservoir withdrawal. Eight thousand weary marines lay besieged at Yudam-ni; three thousand more were at Hagaru-ri, preparing a breakthrough to the sea. Guarding a frozen mountain pass between them, Major Barber, with only a company, held their fate in his hands. Encirclement threatened him: he was ordered to withdraw. But he asked permission to stay, and for five zero-cold days the company held the pass against attack. The Major, badly wounded, was carried about on a stretcher to direct defense. When relief came, only eighty-four men could walk away. But Major Barber's action had been decisive in saving a division.

"I know," says Major Barber, "that you at home realize what hard jobs our sons and brothers are doing in America's armed forces. Maybe you haven't realized that you're *helping* those men—whenever you invest in Bonds. True, Bonds are personal financial security for you. But they also strengthen our economy—to produce the good arms and food and medical care that make our men secure."

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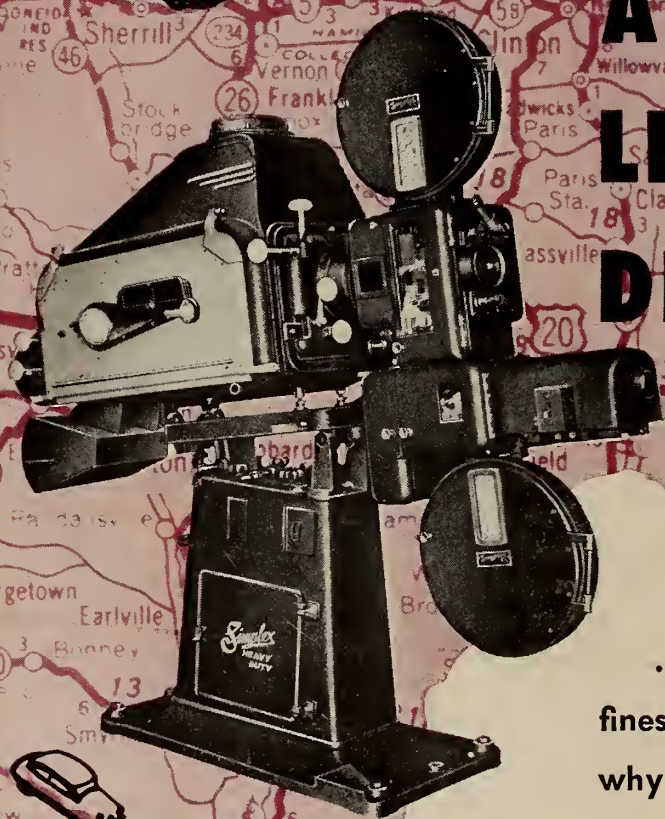
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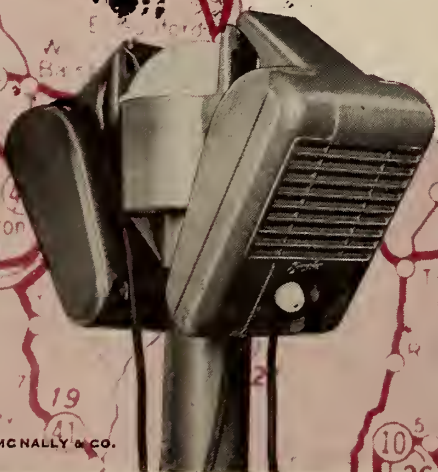
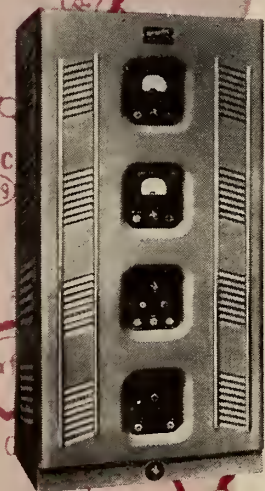


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MARCH

1953

VOLUME 28

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NUMBER 3

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INTERNATIONAL PROJECTIONIST

With Which Is Combined PROJECTION ENGINEERING



JAMES J. FINN, *Editor*

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MONTHLY CHAT

IT IS neither the function nor the intent of IP to decry any process which promises a significant assist to the technical or economic health of the motion picture industry, but recent developments in the production and exhibition branches of the business have convinced IP that the time has come for sane thinking and plain speaking.

Technology, which provided the life-blood for a fabulous industry, has taken over the conduct of the motion picture business for the first time in 25 years. This the non-technical people of the industry are unable to comprehend. Let's face the facts:

We have at the moment two processes which, it is hoped, will free the stay-at-home slaves of parlor Tv: the panoramic presentation as exemplified by Cinerama and Cinemascope; and 3-D films. True, in the first-named process the viewer is "engulfed" by the overwhelming visual impact—but there is no more intimacy or dramatic impact in these wide-screen jobs than there would be in showing a 50-foot image of Kate Smith. Its sole advantage is that of S-I-Z-E. *Dramatic content* must of necessity be, and is, lost.

The foregoing merely touches upon the gargantuan aspects of this, to our mind, sad process. Take a look at Cinerama, for example, from the balcony and you will see the awesome spectacle of Niagara Falls flowing *up*. But even Cinerama recognizes the inevitable: to provide for the light requirements of a screen three times the normal size, it provides, by means of three projectors, three times the normal illumination. Sure, this sort of thing is impressive, but when the catalog of the old Burton Holmes travelogues is exhausted—that is a doleful "that is all."

For Cinerama, the New York installation reportedly cost \$50,000! Let's say that in La Crosse, Wis., and its counterparts, they work this price down to a mere \$20,000. If there be this sort of venture-capital available today for an industry already reeling from the body blows administered by home Tv, the biggest financial institutions in America have yet to hear about it.

Moreover, granted that La Crosse, Wis., installs Cinerama, the economic forces at work in the industry today (equipment, installation cost for 70% of the theatres in America, and manpower requirements) will, we think, prove insurmountable. Despite the *chi-chi* of main-stem premieres, the motion picture business since its inception has been

(Continued on page 24)



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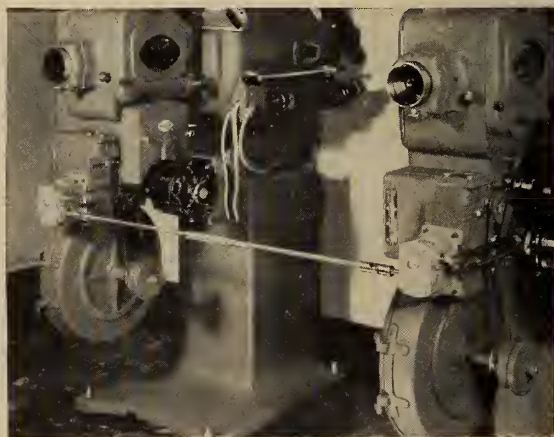
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Types of Theatre Sound Reproducers

This is the third of a series of articles analyzing the essential nature of devices that convert sound records into electrical currents.

III. The Sound-on-Film Reproducer

By ROBERT A. MITCHELL

MUCH data anent distortion in sound-on-disk reproduction applies to sound-on-film. An out-of-focus soundhead optical unit, for example, is precisely analogous to a worn phonograph needle. Not only are high frequencies of sound lost when the optical unit is out of focus (or the phonograph stylus worn), but spurious frequencies distortion arise. And uneven motion of the film through the scanning beam gives the same undesirable wows, flutter, *etc.*, as are produced by inequalities in the speed of a revolving disk record.

But there is an important difference between the film and disk methods of reproducing sound. Sound-on-film has no mechanical link between the sound record (soundtrack) and the pickup device (photocell). The "needle" of a soundfilm reproducer is photronic, not mechanical.

It is not easy to design a soundhead in which the film moves past the scanning beam with a perfectly uniform motion. The most that can be done is to reduce the "flutter content" to a point so low that it is imperceptible to the ear. Many of the early soundheads failed to attain the necessary uni-

formity of film-travel, hence their performance was seriously marred by a wavering pitch of the reproduced sound.

The first soundheads utilized a stationary "soundgate" through which the film was pulled by a sprocket. Because irregularities in the rotation of the "sound sprocket" introduced objectionable flutter, vibration caused by the driving gears was minimized by attaching a heavy flywheel to the sound-sprocket shaft. The performance of this "damping" arrangement was further improved by non-resonant flexible coupling of the flywheel to the sprocket shaft.

Top Maintenance Necessary

Many of these old-style sound-heads are still in use. Some of them, notably the W.E. models, give surprisingly good results when the sound sprocket, the damping flywheel, and their common shaft are kept in first-class condition. Projectionists operating on these primitive soundfilm reproducers are required to keep the sound gates and their tension pads scrupulously clean and free from accumulations of lint, wax and emulsion at all times. Deposits of dirt in the gate displace the film from the focal point of the optical

system, and may even cause a kind of "sticking" which results in sound-flutter.

Regarding the effects of lint or dirt interposed in the scanning beam, much depends on whether the soundtrack is of the variable-density or the variable-area type. In the case of variable-density tracks, there will be no distortion of the sound, but loss of volume may prove serious. But in the case of variable-area tracks partially masked by dirt, actual distortion of the "second-harmonic" type will occur. In rare instances, lint in the sound aperture may vibrate, causing rumbling and thumping sounds.

In the early days of sound pictures, before the application of the "kinetic-scanning" principle, several unsuccessful attempts were made to "damp" the film between the sound sprocket and the gate, thus eliminating irregularities of motion produced by the teeth of the sound sprocket engaging and disengaging the sprocket holes of the film.

In one widely used, but now obsolete, soundhead, for example, we find a free-turning "impedance roller" positioned between the sprocket and the gate. The flywheel was attached to the shaft of the impedance roller, rather than to that of the sound sprocket. The film passed through the soundgate, over the freely revolving impedance roller, then over the sound sprocket (which did the actual work of pulling

the film down through the gate), and finally over the holdback sprocket.

Deficiencies in Early Models

The performance of this soundhead left much to be desired. Although the free-turning impedance roller was intended to smooth out irregularities in the motion of the film, it actually caused more flutter than it eliminated. The reasons are not difficult to find.

In the first place, the film was held in the curved sound gate so tightly by the clock-spring steel tension pads that any damping effect that the impedance roller and its flywheel could possibly exert was effectively nullified. Second, the length of film from scanning point to sound sprocket was so great that uneven shrinkage of the film unavoidably resulted in fluttery sound.

It will be noted that the most satisfactory of the old-time soundheads were so designed that the distance between the sound sprocket and the point of scanning in the sound gate was as short as possible.

Third, excessive tension on the film in the soundgate created a condition whereby the taut loop of film passing around the impedance roller acted very much like a bouncing spring, imparting irregularities to the movement of the film. The last pair of these

soundheads in the writer's State were replaced with modern reproducers a couple of years ago.

With the development of the "rotary stabilizer," soundhead design changed radically. The soundgate was replaced by a free-turning scanning drum; and the sound sprocket ceased to act directly upon the film at the point of scanning.

Soundhead Design Changes

The scanning drum of the modern soundhead is a cylinder over which the film passes with a lateral displacement sufficient to permit the scanning beam to pass through the soundtrack without being cut off by the solid drum. The surface of the drum is highly polished to prevent scratching the film. Any dirt or emulsion which may happen to accumulate on the drum should be removed with an orange-wood stick, not with any metallic object that might scratch the surface.

The scanning-drum shaft carries a flywheel at its opposite end. This, a self-damping flywheel of special construction, is the rotary stabilizer.

Now, the scanning drum is driven only by the film which is pulled down at the rate of 90 feet per minute by the sound sprocket. But after the free-turning scanner attains normal speed,

it continues to revolve, not by the *direct* pull of the sound sprocket on the film but by the "filtered torque" of a small film-loop which automatically forms between the kinetic scanner and the sprocket. Any small irregularities in the rotation of the sound sprocket, therefore, are absorbed by this small loop, or slackness in the film, and cannot affect the rotation of the scanner which moves the film at a constant speed through the scanning beam.

Function of Film Loop

At first thought, this seems very confusing—the film, pulled by the sound sprocket, makes the scanner revolve; yet the scanner moves the film through the scanning beam! The film, however, is not taut between sound sprocket and scanning drum: a "slackness," or small loop, has formed of its own accord. And while sufficient pulling power is transmitted through the loop to keep the scanner revolving, the very fact that there is a slackness in the film between sprocket and scanner is insurance against irregularities of movement being transmitted to the film at the scanning point.

To make certain that it is the revolving drum, and not the sound sprocket, that effects transit of the film at the point of scanning, the film is pressed firmly against the drum by a guide-roller and pressure-pad assembly. So important is the condition and adjustment of this assembly to proper operation of the soundhead that the projectionist should inspect it frequently and lubricate it according to the manufacturer's instructions.

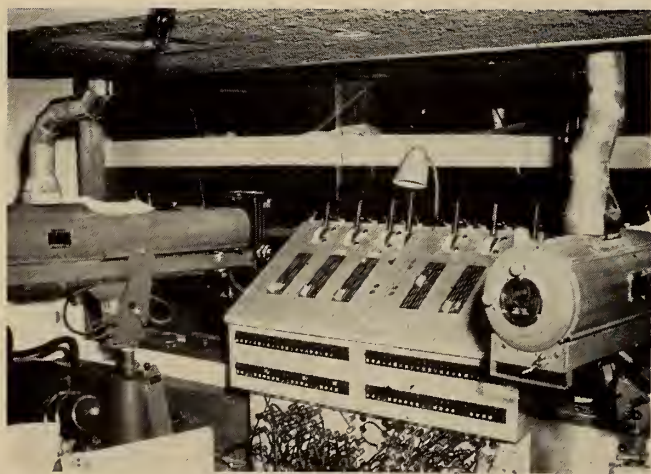
Neutralizes Disturbing Factors

Unlike an ordinary flywheel, the rotary stabilizer neutralizes all forces which tend to disturb the constant speed of the kinetic scanner. The flywheel which is attached directly to the scanner shaft is a hollow drum—something like a sealed, empty can of rugged construction. Inside this can is a smaller, solid flywheel. The heavy, inner flywheel is not fastened to the scanner shaft, however, but is free-turning, mounted on ball-bearings.

The small space between the inner surface of the outer flywheel and the outer surface of the inner flywheel is occupied by oil of proper viscosity. A film of oil is thus the only mechanical connection between the two flywheels of the rotary stabilizer.

The friction provided by the vis-

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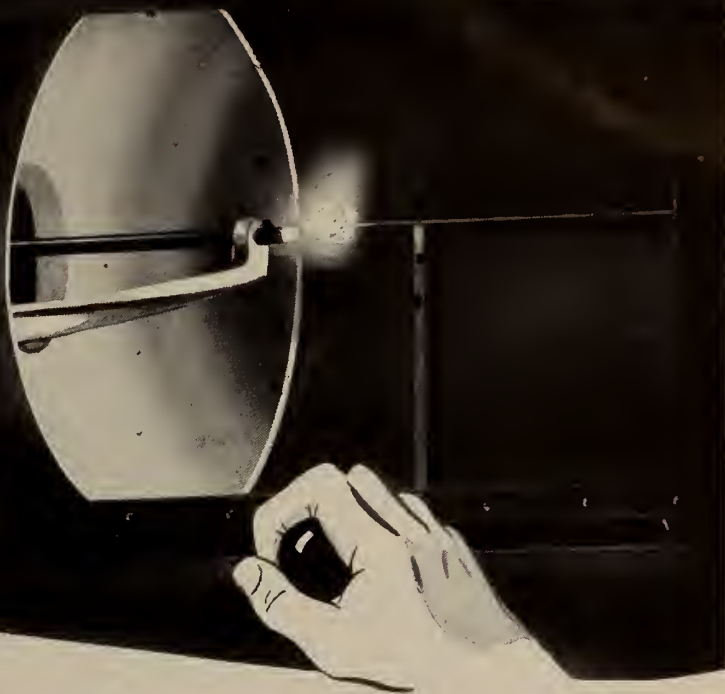


The regard held for the proper lighting of the pretentious stage and floor shows presented by Las Vegas, Nev., hotels is evidenced by a picture of a modern and completely equipped control room. The Sahara, Sands, and Flamingo hotels and the Desert Inn have provided for an abundance of exceedingly bright, flickerless light by adopting high-intensity arc spotlights with automatic arc controls. Control room space has been conserved by using adjustable, self-regulating transformers with these spots, rather than spotlights that require heavy rotating equipment. A trim of carbons burns 80 minutes.

Using a two-element, variable-focal-length objective lens system, together with a silvered glass reflector, these hotels can produce a sharp-edged spot from head spot to flood. The horizontal masking controls can be angled 45 degrees in each direction. Fast-operating, 6-slide color boomerangs permit the embellishment of any act by the use of light of any color. Pembrex Theatre Supply Co., Los Angeles, directed the installations.

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cosity of the oil causes the inner flywheel to revolve whenever the outer flywheel revolves. In other words, kinetic energy is transmitted from the outer to the heavy, inner flywheel. Energy, however, can be sent back from the free-turning inner flywheel to the outer one; and such a "kick-back" of energy occurs every time a disturbing factor—such as the passage of a film splice over the scanning drum—comes along. The returned energy powerfully resists any change in the constant speed of the scanning drum.

Magnetic Flywheel Used

An interesting variation of the rotary stabilizer is the magnetic flywheel,

much used in soundheads of European design. In brief, this flywheel is an accurately machined copper disk revolving in close proximity to a free-turning flywheel faced with powerful magnets. Irregularities in the rotation of the copper disk (which is fastened to the scanner shaft) are suppressed by the energy evolved in the generation of "eddy currents" in the disk by the magnets. Just as a short-circuited dynamo strongly resists rotation of its armature, so does the magnetic flywheel resist mechanical forces tending to disturb the constancy of its rotation.

There are many variants of the magnetic flywheel; but none of them seem to be so effective as is the rotary

stabilizer. In fact, most of the soundheads using magnetic flywheels are complicated by the addition of compliance rollers, "flutter suppressors," and other damping gadgets which act directly on the film between the scanning drum and the sound sprocket.

Some of the European soundheads employ a cascade of rollers that makes threading a time-consuming operation. With very few exceptions, American soundheads are characterized by efficient, clean-cut design.

Holdback Sprocket Vital

Every soundhead requires a holdback sprocket to prevent the action of the takeup from being transmitted through the film to the scanning point. Incredible as it seems, manufacturers of "bootleg" and export soundheads have tried to cut costs by substituting a simple tension roller for the holdback sprocket. The attempted "economy" has time and again proved very expensive for the owners of small theatres who, lured by low prices, purchased sound equipment without first consulting competent projectionists.

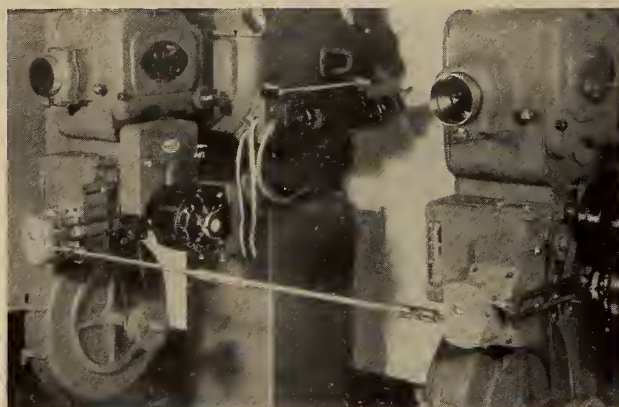
No number of idler rollers can function as a "holdback." If there be no holdback sprocket in a soundhead, then the sound sprocket itself will function as a holdback. Every projectionist knows that the teeth of a holdback sprocket work on the top edges of the film perforations; while the teeth of all other sprockets in a projector work on the bottom edges of the perforations.

All modern soundheads of good quality, therefore, either have a separate holdback sprocket, or else utilize a single large sprocket which does double duty with the film contacting the sprocket on opposite sides. (Since there is a loop between the two points of contact, tugs and yanks given to the film by the takeup are not passed along to the scanning drum.)

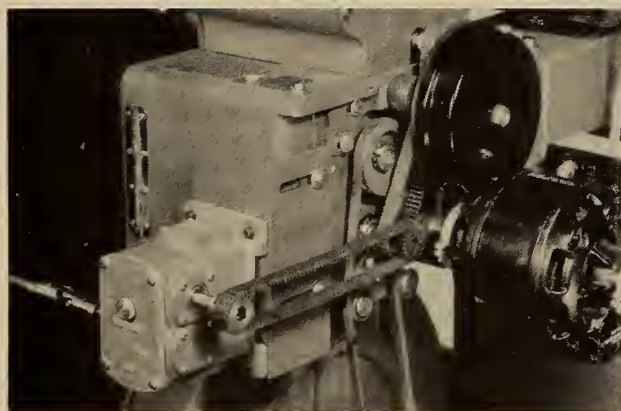
To insure that the gears and sprockets of the soundhead revolve with as little irregularity as possible, the soundhead is driven directly by the projector motor. If the soundhead were driven through the projection mechanism, "gear flutter" might appear in the reproduced sound. "Wows" caused by the takeup are prevented by driving the takeup assembly from a pulley attached to the main drive-gear of the projection-head. An exception is sometimes made when the sound-sprocket

(Continued on page 29)

Motiograph 3-D Projector Interlocks Ready



Two views of the Motiograph 3-D mechanical interlock. Over-all view (above) looking from projection ports. Closeup (below) of projection chain drive mounting.



Users of Motiograph sound equipment will have a choice of either a mechanical or an electrical interlock system for adapting to synchronous projection of 3-D films.

The mechanical system, available for immediate delivery, interconnects the Motiograph soundheads through gear reduction boxes mounted on the front of the main castings and joined by a slowly revolving adjustable cross-rod. It is adaptable for use in conjunction with any make or model of projector mechanism employing a standard drive.

The more costly electrical interlock

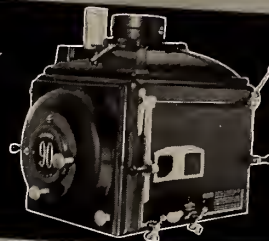
system using Selsyn motors is furnished on special order only. Mounting and driving details are the same as for the mechanical system, the Selsyn motors merely replacing the gear reduction boxes, and the cross-rod being eliminated in favor of electrical connections through a common starting switch.

In anticipation of increased demand to be created by the release of several new 3-D pictures, production of the mechanical interlock systems is being greatly stepped up. The company asserts that it will be able to meet any demand on short notice.

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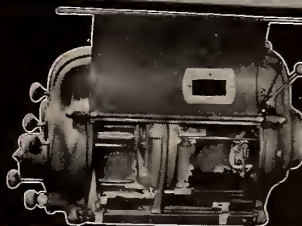
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The Film-Cooling Problem

An Exclusive IP Interview with

FRED C. MATTHEWS

Vice-President, Motiograph, Inc.

IS THE German Ernemann projector the only "cold" projector? One American manufacturer, Motiograph, has come forward for the benefit of readers of IP with definite comment on the controversial topic of cooling both mechanism and film. Referring to "An Object Lesson in Film-Cooling" by Robert A. Mitchell in the February, 1952 issue of IP, Fred C. Matthews, vice-president of Motiograph, Inc., states:

"Unquestionably, IP is correct in stating that the combination of blower, water-cooled aperture, and filter would make it more certain that the film and projector gate would be desirably cool. Long before the Eastman experiments in air-cooling the projector gate [see the articles by F. J. Kolb, Jr. in the January, February, and March 1950 issues of IP]. Motiograph made available a blower for the Model AA to be used with arcs operating in excess of 70 amperes."

The Motiograph AA Blower

Figure 1 shows the aperture-cooling blower attached to the AA mechanism. The motor which powers the 2½-inch diameter blower is rated at 1/5 h.p. The air is directed through a rigid tube (flexible ones are also available) which enters into the large hole in the casting immediately below the shutter. A duct inside the housing channels the air up to the aperture.

Is this blower of any real advantage? Says Mr. Matthews:

"We are absolutely safe in assuming that our aperture-cooling method is entirely satisfactory. In well over 300 installations there have been no reports of film buckling or in-and-out-of-focus projection."

The European preference for rotary



FIG. 1. Aperture-cooling blower attached to the Motiograph AA projector mechanism.

cylindrical rear shutters is indicated by their use over the years in the Ernemann, Euro, and Bauer projectors. This type of shutter is extremely efficient, for unlike the disk and conical shutters, it gives a *double cutoff* of light, one edge moving up through the light-beam while the other edge cuts downward, both meeting in the center. Moreover, it can be designed in several different ways to act as a fan, or air-circulator, thus forcing cool air over the hottest parts of the film and gate.

Cylindrical Shutter Selected

Motiograph, after many years of experimenting with shutters of all types, decided to use the cylindrical rear double-cutoff shutter exclusive of other types, beginning with the H and HU projectors, and continuing through with the modern K and AA mechanisms. In the Motiograph AA the shutter is placed very close to the film aperture for extremely rapid occultation.

The cylindrical shutter of the Motiograph AA is shown in Fig. 2. One end has air-propelling vanes originally intended to keep the shutter bearings cool, but actually proving of great value in dissipating heated air which might otherwise raise the temperature of the gate casting.

"This is not a vague claim," declares Mr. Matthews, "for we know that it really works. We have produced rotors with and without these vanes; and, as a result of field comparisons, we adopted this rotor as standard."

The reader may recall that the new Ernemann X projector utilizes an exhaust centrifuge at the top of the mechanism housing in an effort to draw all heat from the gears and bearings. Both Motiograph and Brenkert also use fans to suck air from the mechanism. Fig. 3 reveals the grating in the Motiograph AA mechanism through which air is expelled by a fan placed directly underneath.

Asked for comment on the value of this exhaust fan, Mr. Matthews replied: "I do not think that this fan is really necessary."

Lamphouse Ventilation Vital

Throwing light upon another angle of the heat problem, the Motiograph executive called attention to the desirability of adequately ventilating the lamphouse, especially when arcs of high

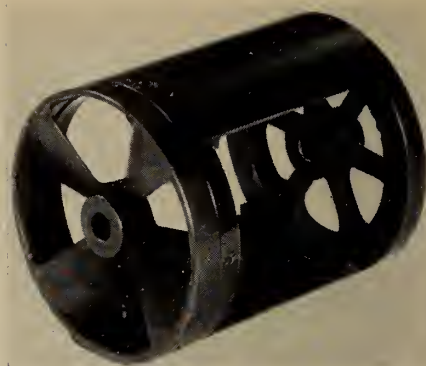


FIG. 2. Cylindrical shutter of Motiograph AA.

amperage are used. To quote Mr. Matthews:

"When we made our first installations of 85- and 100-ampere arcs, we discovered that the recommended ventilation system having a blower with a capacity of 400 cubic feet per minute was not powerful enough to dissipate the heat from these high-amperage lamps.

"In designing projection buildings for drive-in theatres we used an arc-lamp ventilating system incorporating a blower of 750 cubic feet capacity. This eliminated a lot of the excess heat and, incidentally, improved arclamp operation. We later incorporated a separate blower in the lamphouse to bring in a supply of air at room temperature into the lamphouse, which also contributed to more satisfactory operation.

"We know definitely that when the new lamp ventilation systems were installed, mirror breakage ceased and the lamphouse exterior was much cooler. Carbon consumption was decreased, and picture illumination was improved.

"Our special lamphouse blower, which operates independently of the main arc-lamp ventilating system, consists of a small centrifugal fan 2 inches in diameter driven by the arc-control motor. This fan forces air into tubes which

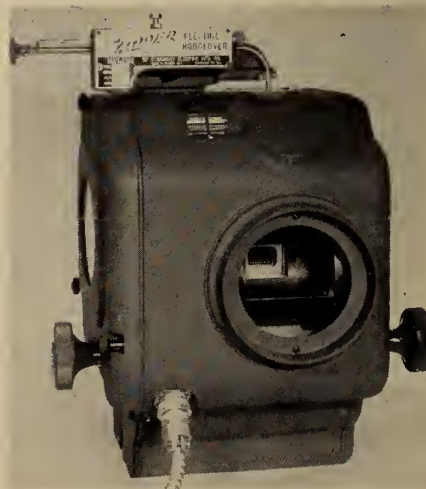


FIG. 3. Air-expelling grating on Motiograph AA.

"Light housekeeping . . . a necessity"

Obvious to everyone may be the fact that not enough light is getting to the screen; or that the sound system is not functioning properly.

The reasons, however, may be varied—equipment failure, inadequate house-keeping, or a drop in power output. Aid in this type of trouble-shooting may be obtained from the Eastman Technical Service for Motion Picture Film which Kodak maintains at strategic centers to cooperate with producers, processors, and exchanges and exhibitors.



Address:
Motion Picture Film Department
EASTMAN KODAK COMPANY, Rochester 4, N. Y.

East Coast Division
342 Madison Avenue
New York 17, N. Y.

Midwest Division
137 North Wabash Avenue
Chicago 2, Illinois

West Coast Division
6706 Santa Monica Blvd.
Hollywood 38, California

spread the air around the lamphouse, most of it being directed to the bottom of the mirror."

It is generally agreed that lamphouse ventilation, while of the utmost importance to the overall projection process, exerts no appreciable effect upon the *temperature of the film*.

Film Temperature Unaffected

Heating of the gate and the film is caused solely by the radiant energy contained in the arclamp beam thrown forward by the mirror and concentrated on the film, the aperture plate, parts of the gate casting, and on the shutter. The shutter necessarily absorbs approximately one-half of this terrific outpouring of radiant energy. Some of this heat is dissipated in the air; but some of it is conducted, *via* the shutter bearings, to the mechanism proper.

"Radiant heat," or infrared radiation, is not heat at all *until it falls upon something which absorbs it*, just as black paper absorbs visible light. When something absorbs this radiation, neither reflecting nor transmitting all of it, be it the silver photographic image on the film or metal parts of the motion picture machine, heat is generated. Generation of heat from this cause cannot be prevented.

Visible light also generates heat in this manner. In fact, about 1/3 of the heating effects of the high-intensity arc beam are due to visible wavelengths, and 2/3 to the invisible infrared. Heat filters reduce heating of mechanism and film only by cutting out most of the infrared; but complete reduction of the heat is utterly impossible.

Direct Irradiation the Cause

Direct irradiation is therefore responsible for heating the film and the mechanism, and is indirectly the cause of heating even the edges of the film, even though these are shielded from the direct rays. Whenever film passes through a hot gate, the heated metal transfers some of its heat to *both* the photographic images and the clear film base.

The temperature of the lamphouse and the mirror has nothing to do with the heat-energy latent in the powerful radiance of the arc beam. *Only* the temperature of the positive crater and the reflective efficiency of the mirror determine the power of the beam which illuminates the picture.

But, to repeat the gist of Mr. Matthews' statements, it should always be kept in mind that adequate lamphouse cooling is a prime requisite for satisfactory lamp operation and, hence, a properly illuminated picture out there on the screen.

IP invites all projection-equipment manufacturers to come forward, for the

3-D Projection Requisites

By MOTION PICTURE RESEARCH COUNCIL

APPENDED hereto are hot-off-the-griddle (February 19) recommendations of the Motion Picture Research Council (Hollywood) relative to the proper presentation of stereoscopic 3-D motion pictures. The Council is supported by and reflects the views of such eminent motion picture companies as Columbia, Loews (M-G-M), Paramount, 20th-Fox, Republic, RKO, Universal and Warners.

IP recognizes the eminence of both the Council and its member companies, but because it subscribes to the belief that people need not so much to be told as to be reminded, and also because it believes that complete candor ultimately brings its own reward, it hastens to point out that this information in almost identical form was published in IP for January last on page 6.

Moreover, IP wants to extend credit for its first-anywhere report to a tireless worker in the projection vineyards for the past 40 years, Harry Rubin, director of projection for United Paramount Theatres, who immediately upon his return from Hollywood unselfishly made available to the entire industry the fruits of his long and painstaking investigation into the problem of the proper presentation *on the theatre screen* of 3-D motion pictures. The MPR Council report follows:

Such systems consist essentially of taking simultaneously two photographs of the same scene, with the lenses of the two cameras separated so that their view is slightly different. The two pictures are then projected simultaneously in synchronism, with polarizing filters on the projectors, so that the audience (wearing viewers) sees only the right picture with the right eye, and only the left picture with the left eye. Therefore, once a theater is converted for stereoscopic 3-D systems, the theater can show film from *all* producers making such pictures.

In converting the theater, it is necessary to properly align the two projectors, to interlock them so that they will run in absolute synchronism, to use larger magazines and reels in order to minimize intermissions, to adjust rewinds to accept the larger reels, and to project only on a metalized directional screen.

Alignment of Projectors

The two projectors must be aligned so that the vertical and horizontal center lines of the two projectors are superimposed on the screen. The Research Council has prepared Target Test Film so that the projectors can be properly lined up. This test film is available either in the form of short sections for loops or in larger rolls. Sufficient length for

benefit of projectionists everywhere, with observations based upon their own experience with water- and air-cooling of the projector mechanism, the use of heat filters, and the use of auxiliary lamphouse-cooling appliances.

loops for two projectors is available for \$2 (postpaid). Longer lengths are available in multiples of 50 feet at 8 cents a foot.

Projector Interlock

The two projectors must be locked together so that the right and left prints are projected in synchronism, frame for frame. This interlock can be accomplished either mechanically or electrically. Mechanical interlock is by means of a shaft which connects the two machines. In many cases it is difficult to install as the shaft blocks the front wall control station. In general, the electrical interlock is more positive, results in a cleaner job, mechanically, and will require less maintenance.

Magazine and Reel Size

Since both machines must run simultaneously, changeovers are not possible and intermissions are required while reels are changed. Therefore, larger reels and magazines are needed. In order to allow a show of 10,000 feet with only one intermission, 25-inch magazines to accommodate 24-inch reels are recommended. These reels will hold up to 5000 feet of color positive film or approximately 5500 feet of black-and-white.

Because of their size and weight, such reels must have free-wheeling flanges to minimize strain on the film when the machine is started. Otherwise perforations will be pulled and the pictures will be out of synchronism.

It should be pointed out that either 3-D or regular single-film short subjects or newsreels can be put on, but *only* on, the end of the second (or last) reel of the feature. If the short subject is in 3-D,

both projectors will continue to run to the end of the subject. But, should the short subject be in 2-D it would be added to only *one* of the two reels. Therefore, during the showing of a 2-D short subject the second machine could be disconnected from the interlock and shut down so as to have the first reel of the 3-D feature ready for the next show. The intermission would thereby be shortened, since only the remaining projector would require threading-up during the intermission.

Since the 5000-foot reels permit a show-time of 1 hour and 50 minutes, with one intermission, this time must include both the feature and the short subjects, if any.

Rewinder Adjustment

The rewinds will have to be raised so that the larger reels will clear the rewind table.

Viewers and Filters

The V-type viewers, that is, having planes of polarization of 45 degrees with the vertical must be used. Also, the right-eye print must be projected on the right-hand machine (the machine to the right of the projectionist as he faces the screen). The angle of polarization of this filter shall be the same as the polarization of the right-eye viewer. This right-eye print shall be designated as the Right Print on the identification leader.

Screen Requirements

Metalized directional screens are required. Several types are now commercially available, and the Council is making tests of their suitability. It is possible to spray existing mat screens with suitable metallic paints. Recommendations will shortly be forthcoming on the best type of paints for this purpose.

Exchange, Projection Data

The Council, in cooperation with the Society of Motion Picture and Television Engineers, is preparing information for projectionists concerning stereoscopic projection and for exchanges on assembling prints. Information on the identification leader will be included.

Williams Screen Co. Goes 3-D 100%

Production of silver screens for use with three-dimensional picture projection is now taking the entire facilities of Williams Screen Co., Akron, Ohio. Super-reflective screens, which are adaptable to the peculiar requirements of all 3-D processes and wide-screen systems, have been engineered to assure sharp, brilliant pictures with vivid contrast in any theatre.

These screens, which are produced from seamless plastic, remain permanently flexible. Perforations are clean-cut, with no projecting fibres to impede sound or collect dirt. They are fungus-proof and unaffected by moisture. Every screen is being shipped with a protective coating.

History of the American Labor Movement

Prepared by the U. S. Dept. of Labor, this history traces labor activity and legislation from Colonial times to today.

Chapter VII. Welfare, Political Upsurge

WITH wages stabilized during World War II, paid holidays, paid vacations, health and welfare benefits, and arbitration procedures were written into many agreements for the first time. The postwar period has witnessed a marked growth in the number of contracts with such provisions. Another feature of contracts negotiated within the last 2 years is the liberalization of previously established practices, such as the increase in the numbers of paid holidays, provision for an extra week of vacation to employees for long service, and extension of the coverage or increase in the benefits under insurance and other welfare plans.

Welfare and retirement plans under union contracts covered at least 3 million workers by mid-1948. In 1949 and early in 1950, there was an increase in welfare and retirement plans under collective bargaining. By mid-1950 over 7½ million workers were covered by such plans. In addition, many AFL international unions and their locals have for many years maintained benefit programs financed entirely by membership dues or assessments. About 70 AFL affiliates disbursed approximately \$67 million for death, sick, unemployment, old age, disability, and miscellaneous (including strike) benefits in 1949.

Paid Vacations a 'Must'

The interest in vacations as an objective of collective bargaining is reflected by the rapid increase in the number of agreements providing vacations. In 1940, only about 25% of all workers under union agreements were entitled to paid vacations, as compared with 85% (11½ million workers) in 1944. Currently, virtually every union agreement contains provision for a paid vacation.

The majority of agreements run for fixed periods, usually 1 year, after which they may be automatically renewed by

mutual consent or renegotiated by the parties. Some agreements of longer duration contain provisions for special renegotiation of the wage clause during the life of the over-all agreement. Other agreements provide for wage adjustments in the event of increased productivity or cost-of-living changes. Provisions for cost-of-living adjustments tied to the consumers' price index of the United States Bureau of Labor Statistics gained special prominence during the latter part of 1950, when prices surged upward because of the Korean war.

Other Functions and Activities

As labor unions grow, their activities and obligations to their members expand. New services are provided. Many unions have established research and education departments to assist the international union officers and local union committeemen in developing facts and statistics for use in collective bargaining. New members have to be informed and kept abreast of developments within the union and the Nation. For this purpose, newspapers were started and educational classes or "institutes" were organized.

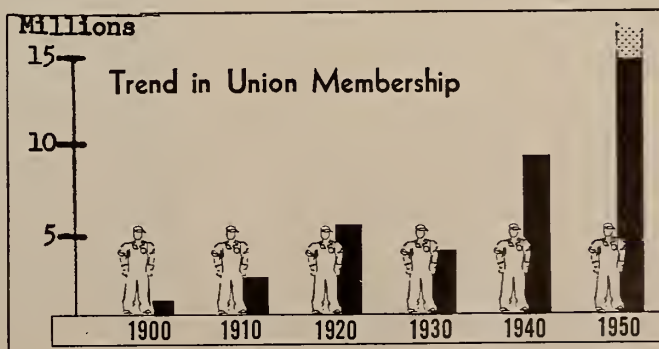
The expanding role of the union in the community, State, and Nation drew labor representatives into various public agencies and groups to give expression to labor's interest in politics, education, welfare, charitable, and other civic undertakings.

Union functions may now be classified broadly as follows: administration of internal union matters; negotiation and administration of collective agreements; educational and beneficial activities; and participation in community, State, and National affairs.

Administration of internal affairs involves the holding of conventions and meetings of the executive board, direc-

(Continued on page 26)

These figures are based on reports from Unions to the Bureau of Labor Statistics, U. S. Dept. of Labor.



Tv Projection with I-O Cameras

Since early in 1951 WABD-TV, key station of the Du Mont Tv network, has been using image-orthicon cameras for the transmission of all film transmissions. The projection phase of this operation is discussed in the appended excerpt from a report by the Du Mont engineering section.*

By R. D. CHIPP

Director of Engineering
Du Mont TV Network

OVER the past two years there have been a number of discussions concerning the use of the image-orthicon pickup tubes for the transmission of film. These have covered, in some detail, the characteristics of such tubes, and the basic design of film projectors for television. They have also suggested some of the advantages and the disadvantages of film cameras using image orthicons.

By early 1951, WABD was using Type 5820 image orthicons for all film transmission. It should be emphasized that we were primarily concerned with consistently good reproduction of films of uncertain vintage and quality, rather than with excellent reproduction of a few films especially made and processed for Tv.

Projection Room Layout

The WABD projection room was originally laid out in March 1946, equipped with two Simplex 35-mm and one Victor 16-mm projectors. These had been modified for 2-3-2-3 pull-down. In 1948 we added two Du Mont-Holmes, Model 5130C, 16-mm Tv projectors. These were placed and mounted as shown in Fig. 1.

Mounting details for the 16-mm projectors, which weigh approximately 300 lbs. are shown in Fig. 2. The concrete base weighs approximately 500 lbs. and provides extremely steady operation. Tests for picture stability are better than the proposed RTMA/SMPTE specifications, and no mechanical changes have been necessary to adapt any of the projectors to image-orthicon use.

The cameras are standard Du Mont equipment, Model TA-124, normally used in studios and in the field. Each is equipped with a 90-mm, F:3.5 lens and so placed with respect to the screen that the photo cathode is 18 $\frac{3}{4}$ inches

distant. The only change required was reversal of the horizontal sweep, which is accomplished by switching two leads on the deflection yoke. The cameras are aligned and adjusted in a conventional manner, using the "knee-of-the-curve" technique.

Intermediate Screen Used

The original projection room was equipped with iconoscope cameras mounted on tracks. These were moved into position in front of any one of the four available projectors, which were separated from the cameras by a fire wall. This was a conventional arrangement. In order to substitute image-orthicon cameras, with no disruption of a heavy operating schedule, it was decided to retain the same method of camera mounting. This, in turn, precluded use of direct projection, and indicated use of an intermediate screen between the projector and camera.

The 16-mm projectors, originally equipped with 4-inch lenses for iconoscope use, were refitted with 2-inch, F:1.9 lenses to produce a $3\frac{3}{8} \times 4\frac{1}{2}$ -inch image on the screen. The 35-mm projectors, originally equipped with



FIG. 2. Mounting of 16-mm projector.

8 $\frac{1}{2}$ -inch lenses, were refitted with 5-inch, F:1.9.

Tests of many screen materials were made. Among the materials tested were tracing paper, standard rear-projection material, experimental translucent plastic, latex, ground glass and flashed opal. In view of the relatively small image size, most of these materials were discarded because of excessive grain. From the standpoint of minimum grain and minimum light dispersion, latex appeared to be superior to other materials. However, it aged rapidly, changed color, and was difficult to keep clean.

Ground glass, which did not have these undesirable characteristics, was finally selected as satisfactory for practical use. A metal hood is used to prevent stray light from reaching the screen from either side. Figure 3 shows the hood from the projection-room side, and Fig. 4 from the camera side. Note in Fig. 4 the detent mechanism



FIG. 1. WABD-TV (N. Y.) projection room layout for I-O film transmission.

* "Film Projection Using Image-Orthicon Cameras," by R. D. Chipp; J. Soc. Mot. Pict. & TV Eng., Jan. 1953, p. 1.

which permits the rapid movement and precise location of the cameras.

Substantial Light Reduction

As is well known, substitution of image orthicons for iconoscopes requires a substantial reduction of the light intensity to secure operation of the pickup tube at the proper point on the characteristic curve. Many means of accomplishing this have been suggested. We elected an extremely simple method: the substitution of a 300-watt projection lamp for the usual 1000-watt lamp. These lamps are operated at 90 volts instead of the nominal 115 volts. Screen brightness measurements, with no film in the gate, showed 125 foot-lamberts uniform within approximately ± 10 foot-lamberts.

In order to reduce the light output of the 35-mm projectors to equal that of the 16-mm projectors, we dropped the arc current from 25 to 20 amperes and added neutral density filters having 40% transmission. With the opening of the Du Mont Tele-Center in New York, new and less expensive light sources, now under investigation, will be used.

With most film, and a Type 5820 Image Orthicon, the camera lens may be stopped down to F:5.6. When using a 5826, a typical aperture is F:3.5. These lens settings are average. We have observed that the sensitivity of image orthicons of equal age may vary from tube to tube by a factor of 5. Sensitivity may also change with age by a factor of as much as 10. These variations are equalized by changing the lens stops. As indicated above, we

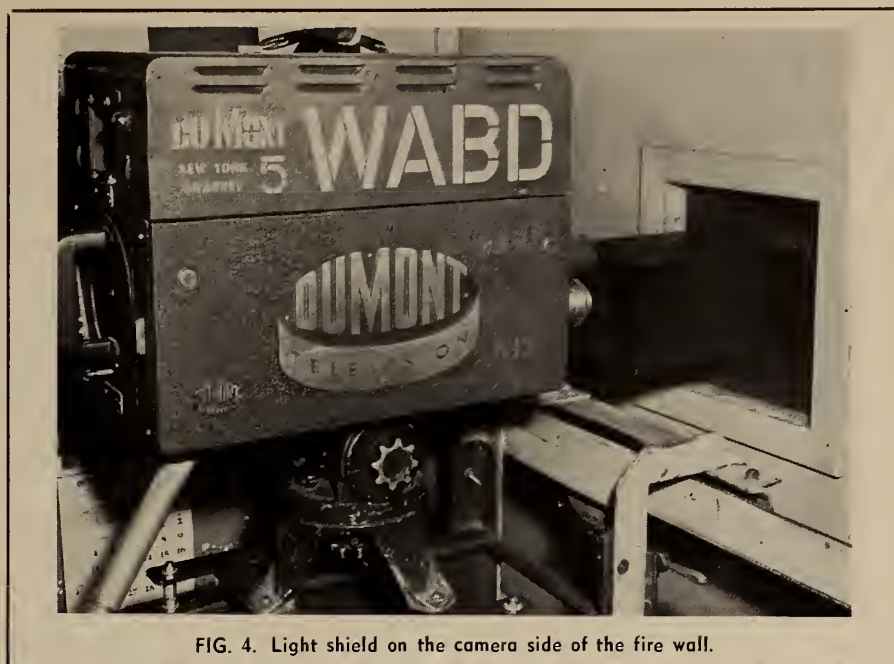


FIG. 4. Light shield on the camera side of the fire wall.

have used both 5820 and 5826 for film transmission. The 5826 provides improved signal-to-noise ratio, and a somewhat better gray scale. Under some circumstances, with very dark scenes or very dense film, some adjustment to the iris is made.

Excerpts From Discussion:

Q. If there's a problem due to grain of the screen material, can't that be eliminated by just using a larger image on the screen?

Ans. Yes, it could. Perhaps I didn't stress sufficiently the physical problem that we had in using an existing location. Now, when we move to our new studios—if we do not use direct projection into the tube, we will use a larger screen.

Q. I wonder if you must form a first image on the screen. I'm not sure what your optical system is, but it would seem that the screen can be eliminated.

Ans. Well, the optical system is conventional in both the projector and the camera, so that we form an image on the screen. . . .

Q. There is then no reason really to form a first image. All you need is a field lens between two lenses.

Ans. Yes, that's probably true. I think investigation might show the field lens would be something rather expensive.

Q. Also, a field lens could be very cheap and very simple as long as it's in the plane of the first image. Every microscope uses this in almost every optical system. It's used to carry an image through several lenses.

Ans. That might be the case. We haven't fully investigated that.

Q. What do you do in case of stills?

Ans. We use the flying-spot scanner for all slides. In case of a program where there may be a series of titles, we use title cards in the studio. They're picked up by the studio image orthicon.

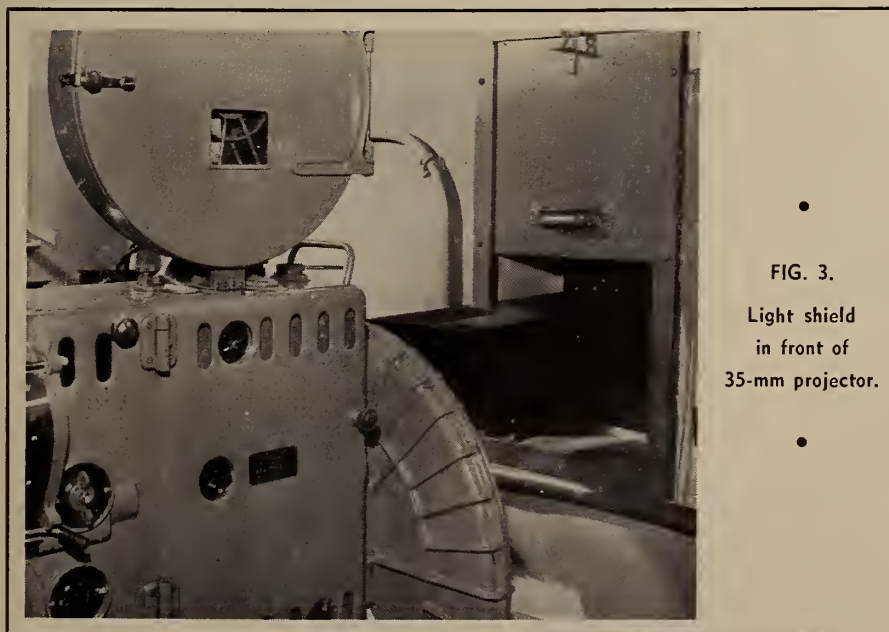


FIG. 3.
Light shield
in front of
35-mm projector.

SMPTE Coast Meet, April 27-May 1 to Feature 3-D, Drive-ins

Stereoscopic motion pictures and the engineering of drive-in theatres stand out in the schedule of sessions for the Society of Motion Picture And Television Engineers' 73rd Convention at Los Angeles, April 27—May 1. Other special subjects slated for serious discussion are color television standards being developed by National Television Systems Committee, subscription television, magnetic recording and editing and high-speed photography.

Barnett to Cinerama Exec Post

Herbert Barnett, formerly assistant to the president of General Precision Equipment Corp., has been named executive vice-president of Cinerama, Inc., the company holding the license to manufacture the equipment used in the projection of Cinerama films.

These 'Curved' Screens

DECENT interment rites having been observed years ago, it occasions no little surprise that some segments of the projection field have again interested themselves in the possibility of correcting certain deficiencies in the projection process by utilizing a "curved" screen. So alarming is this renewed interest in a technological corpse, that we hasten to deliver another—and, we hope, final—graveside sermon over that which, it was thought, had long since departed this world.

The curved screen was sired by a combination of muddled technical thinking, smart promotional minds, and theatre owners who don't know the difference between a photocell and a projection lens.

The curved screen was touted as capable of accomplishing the following chores: (1) correction of distortion; (2) elimination of "hot spot" and glare; (3) creation of an "illusion" of depth; (4) improvement of sound transmission; (5) elimination of the "keystone" effect, and (6) the screen "could be washed like glass."

The most recent curved screen is composed of two surfaces: the first sheet is loosely woven, while the second surface, 2 inches behind the first, is very tightly woven. Both sheets are laced to the frame.

The passage of light through these dissimilarly-woven surfaces is asserted to enhance the illusion of depth and eliminate screen lines and glare by diffusing and *polarizing* the light. Let's see about this and other assertions made in behalf of such a screen.

1. Screen-Image Distortion

Far from eliminating distortion, the curved screen *creates* it! To patrons sitting at the extreme right and left front seats such a screen does appear to lessen distortion—but this is only because parts of the screen are *hidden from view* by the curvature. In all other seats throughout the theatre the screen creates distortion.

Because the screen is curved, not flat, horizontal straight lines appear bowed, while vertical straight lines are variously curved, depending upon the camera angle and the seat from which the screen is viewed. Look, for example, at these current wide-screen

jobs. From the balcony, the waterfall flows up!

Titles shown on such a screen come up curved instead of in a straight line. In the case of vertical straight lines—for example, a microphone stand in a scene where the camera is "panned"—the stand bends like a bow, alternately bending and bowing. Projection images on a curved screen distort the focus, because one cannot focus on a single plane.

The distortion occasioned by the location of seats too far over at either side of the theatre is not, optically-speaking, true distortion but merely the familiar law of perspective. Such screens as have been devised in an attempt to compensate for this deficiency, while they may add to the illusion of naturalness, can never circumvent the laws of perspective.

The important thing to remember is that this type of "distortion" is not *true* distortion but the natural perspective seen when viewing anything obliquely.

2. 'Hot Spot' and Glare

In front-projection the correction of a "hot spot" (so-called because of a concentration of light within a spot at the center of the screen and a deficiency of light elsewhere within the screen area) is definitely not a function of any screen, but rather is it solely a question of the optics of the projector.

As to glare, a curved screen produces *more* not less, glare.

3. Illusion of Depth

No data advanced by the proponents of curved screens—nor, for that matter, *anything* in the literature of the art prior or present—lends any credence to the assertion that a curved screen contributes in even the slightest degree to an enhanced illusion of depth.

Kodak Pays Largest Wage Dividend

Eastman Kodak Co. paid this month the largest total wage dividend in its history. About \$22,500,000 was paid to 52,000 Kodak employees throughout the country. Those eligible received \$27.50 for each \$1,000 earned at Kodak during the five years from 1948 to 1952. Last year's dividend rate was the same, but the total paid was about \$20,000,000.

4. Sound Transmission

The assertion that a concave screen improves sound transmission is just not true, and, in fact, this is not a function of *any* type screen. All screens impair sound transmission to a certain measurable extent, and the curved screen is neither better nor worse in this respect. The answer is to go to stereophonic sound.

5. The Keystone Effect

Elongation of the projected image is caused by steep projection angles. The same is true of "keystoning," which is the widening of the image at the bottom of the screen, with its characteristic convergence of vertical lines toward the top.

These deficiencies could be corrected somewhat by tilting a flat screen to a suitable, but impractical, angle; but the effect anywhere but in the center of the theatre is usually so grotesque as to render futile any such course of action. A *curved* screen cannot eliminate keystoning except at certain places where the curvature assumes the same impractical angle.

6. 'Can Be Washed Like Glass'

This is a false and wholly misleading statement. With ordinary glass, dirt which gathers on the surface may be rubbed off. The curved screen consists of a grouping of glass threads between the fibers of which dirt collects. As with any fabric, the dirt must be *washed* out by laundering.

Because these screens depend for sound transmission upon small pores in its weave—as contrasted with the large perforations in conventional screens—it is definitely a dust trap. In this respect it is similar to the earliest sound screens, which were woven and not perforated and which soiled with amazing speed.

Any curved screen necessarily would have to be taken down frequently and laundered; and if the show is to continue uninterruptedly, the theatre would have to have a replacement screen available or pay overnight laundering charges. This is a major maintenance problem.

Thus the story anent the curved screen. IP would welcome comment from anybody having anything interesting to say on this topic, and particularly from projectionists who have used or, possibly, are even now using a curved screen.

Outline of 16-mm Projection

Presenting some comments on the history and operation of 16-mm projectors, abstracted from a very complete text-book on the subject.*

II

TODAY, 35-mm prints are used almost exclusively in the motion picture theatre; 16-mm prints are used almost exclusively by the Armed Forces of the United States in the training of military personnel. 16-mm prints are also widely used for educational and industrial purposes; 8-mm is now reserved almost entirely for amateur and personal purposes.

So far, the optical reduction of 35-mm to 16-mm has accounted for the largest percentage of prints released in the 16-mm size.

[The picture for 16-mm prints is now obtained from dupes from the original negative; the sound is re-recorded on a 16-mm sound negative and contact-printed for the release print.]

In a small number of newsreel theatres, 16-mm sound projectors have been installed beside 35-mm projectors facing the the same theatre screen. A screen width of 15 feet has been the maximum so far, such projection requiring an efficient arc lamp (or equivalent) operating at a current of about 50 amperes or more to provide sufficient screen brightness. With very good control of film quality, the projected 16-mm films compare favorably with run-of-the-mill, 35-mm prints that may be used for comparison.

Another overlap of interest in recent years is the "blowing up" of 8-mm to 16-mm, and of 16-mm to 35-mm films. Much of the combat war material shown in entertainment theatres was originally taken on 16-mm film. Typical examples have been the many air combat scenes photographed with the GSAP (Gun Sight Aiming Point) camera, a 16-mm camera designed to take pictures of an enemy target when the machine guns or other guns of the combat plane were fired. Where originals were well exposed, well handled, and well processed, the results were satisfactory.

Comparative Characteristics

The comparative table (Table I) indicates the relative sizes, weights, and

like characteristics of 35-mm, 16-mm, and 8-mm.

16-mm was originally intended to be simple and low in cost. It is not reasonable to expect 16-mm apparatus and methods to be merely scaled-down versions of 35-mm apparatus and methods. Simplicity, reliability, operating convenience, small size, and economy are essential requirements—without these, 16-mm film fails its real purpose.

A 16-mm image is so small that the average unaided eye is incapable of distinguishing the fine detail in it. To make such small images convenient to view, they are enlarged in projection. In the case of a screen 6 ft. wide (a common size) the magnification in projection is equal to the screen width (in inches) divided by the projector aperture width (in inches), or 72 divided by 0.384; the ratio is 190. Such magnification is common with 16-mm projectors using a 750-w. lamp. (The screen illumination will be somewhat low when this magnification is used with the average projector.)

Screen Brightness

When a projector with a suitable light source such as an arc lamp is used, a screen 12 ft. wide can be filled comfortably. Ordinarily, such projection requires approximately 35 to 50 amps. for the arc to provide adequate light output with an efficient arc lamp. This latter case represents twice the magnification of the previously cited example, or 380. With really high-grade lenses, film, equipment, and operation, the quality of projected picture leaves very little to be desired in com-

parison with conventional 35-mm picture projection under comparable conditions of screen illumination.

If a motion picture is to be viewed properly, the screen must have the correct level of illumination in foot-candles in order to provide the correct level of reflected light in foot-lamberts. For 35-mm motion pictures, the ASA Standard Z22.39-1944 "Screen Brightness for 35-mm Motion Pictures" requires that "the brightness at the center of a screen for 35-mm motion pictures shall be 10 plus 4 minus 1 foot-lamberts when the projector is running with no film in the gate."

A conventional 16-mm projector using a 750-w., 25-hour-life lamp should have a light output, if excellently designed, of 275 lumens; the minimum acceptable should be 200 lumens. At this light level and efficiency, the projector will have 10-foot-lamberts output if the reflection factor of the screen used is about 70% and the screen about 5 ft. wide. If a 1000-w. lamp of 10-hr. life is used to replace the 750-w. lamp in a properly designed system, the light output of the projector will be increased to 385 lumens and the screen width may be increased to about 6 feet.

[TO BE CONTINUED]

Shot-in-the-Arm Eating Next?

Tomorrow's music record shop may look like an automat where you'll drop a spool of magnetic wire into a slot and get it back with the latest song hits recorded on it. This possibility is envisioned by Chicago's Marvin Camras, senior physicist with Armour Research Foundation. When the songs' popularity has waned, the spool would be magnetically erased and the coin-in-the-slot vending machine would again electronically imprint the current favorites.

The inventor believes the idea of using the same spools would save money and prevent accumulation of dead reels in the home collection. Camras also sees the day when spools might be sent mail-order to a central headquarters for re-recording.

TABLE I. Characteristics of Various Sizes of Films

Characteristic	Size		
	35-mm	16-mm	8-mm
Length, ft.	1000	400	200
Linear speed, ¹ ft. per min.	90	36	18
Running time, min.	11.1	11.1	11.1
Relative length	2.5	1.0	0.5
Relative weight and volume	5.5	1.0	0.25
Relative area for picture	4.6	1.0	0.25
Relative area for sound	3.15	1.0	...

¹A speed of 24 frames per second is assumed.

*Cond. from "16-mm Sound Motion Pictures," by W. H. Offenhauser, Jr., published by Interscience Publishers, Inc., New York.

IN THE SPOTLIGHT

MASSACHUSETTS has long had two-men theatre projection shifts *via* a ruling by the Commissioner of Public Safety. Recently, three theatres joined in a court action to void this ruling, with their case being based mainly on the contention that the introduction of cellulose acetate (safety) film eliminated the fire hazard and rendered unnecessary the two-men shift. A superior court judge not only ruled in favor of the theatres but took the unprecedented step of allowing his ruling to stand *pending appeal* to a higher court.

These goings-on will surprise no projectionist, although we might repeat for the umpteenth time that the question of picture *quality* was not even mentioned in the proceedings. After all, what theatre owner is the least bit interested in the *kind* of screen image offered? The paying patrons, the dumb clucks, wouldn't know the difference.

Thus the projectionist craft is once more the victim of its own conscientious effort. Cellulose acetate film was nursed and coddled in its first showings by the craft, and it was one hell of a long time before proper handling technique overcame its inherent deficiencies. So much for that.

Let this Massachusetts action be a guide to the craft when negotiations for 3-D and other special processes come along. Chicago Local 110 stuck to its manpower guns with the Cinerama people, although the Local was castigated *via* the wire services from coast to coast. We're glad and proud that the Local stood fast; and we hope that every other element in the craft, big city and small town alike, asks for and gets its full manpower quota *at the start*—and keeps pitching.

• The growing tendency of American motion picture stars to make pictures abroad, thus not only depriving Uncle Sam of millions of dollars in tax revenue, but also forcing thousands of Hollywood studio workers out of jobs, came in for caustic comment by IA President Richard F. Walsh at the recent AFL conclave in Miami. In his

blast against these stars, Walsh said that while he did not object to filmmaking abroad when foreign locales were essential, he did object when they were made abroad *solely* as a means of dodging U. S. A. taxes.

He pointed out the loopholes in our Federal tax laws which permit American citizens to evade payment of U. S. income taxes if they are out of this

In Memoriam

HARRY SHERMAN

March 3, 1952

country for 18 consecutive months, or more. The IA head asserted that he had the assurance of AFL support in a campaign to plug this loophole by Congressional action.

The Central Union Label Council of Greater New York (City) representing 500,000 organized AFL workers, unanimously passed a resolution last month condemning these tax-evading prac-

tices. The Council urged all affiliated organizations to lend their support to the IATSE in its campaign against such "unfair competition."

The National Public Relations Assembly, a non-partisan body, has asked Walsh to issue an "information list" each month containing the names of pictures made abroad by American movie stars, or other American personnel "clearly and unquestionably for the purpose of taking advantage of the 18-months tax dodge." The tax dodge has become widespread, and as a result thousands of "little people" movie extras, technicians, *etc.*—are out of work.

"The information would be placed before the wage-earning moviegoers of the nation merely for checking purposes," said a spokesman for the Assembly. "Every person would do as he saw fit about patronizing any film made overseas by a tax-dodging American movie star. . . . If such a monthly listing is widely published in the bonafide labor press of the nation, the unemployment situation in Hollywood will be cured within a few months."

• Our belated congratulations to the J. E. "Frenchy" Biencourts on the arrival of a baby boy in their household. "Frenchy" Biencourt is the popular business representative for San Antonio Local 76.

• Added to the ever-growing list of New York Local 306's long-time members who have retired from the craft and are now receiving the benefits

37th ANNIVERSARY CELEBRATION HELD BY LOCAL 512, SPARTANBURG, S. C.



A banquet held in the Franklin Hotel Ballroom, Spartanburg, S. C., marked the recent 37th anniversary for Local 512. Shown here is a group of members and guests at the party. Seated at the table, left to right, are Local 512 members: Ray Williams, vice-president; Kent Walker, E. S. Moore, A. J. Lancaster, R. S. Beam president; John R. Beam, Paul E. Kelley, business representative; G. B. Spillers, Henry Childress, and Ray Williams, Jr. Standing, left to right: Joe Gaffney, president, Local 518, Augusta, Ga.; J. F. Bendingfield, Local 518; Guy Bryson, business representative, Local 697, Greenville, S. C.; J. Sizemore, E. Chastaine, Local 697, and Van C. Ivey 518.

of the Local's pension plan are 25-30 Club members Mike Berkowitz, Harry Mackler, Joe Abrams, Sam R. Rubin, and Harry Hilf. These old-timers have given many years to the craft and helped smooth the road for the younger members.

- The Labor-Management School of the University of San Francisco opened its Spring 1953 session on February 18, and will conduct classes until April 8.

- Lester B. Isaac, director of visual and sound projection for Loew's, Inc. for the past 25 years, has been appointed assistant general manager of theatre operations in charge of technical services for Cinerama. Isaac is slated to assume his new duties on March 6.

- In the recent balloting conducted by the regional office of the National Labor Relations Board, an overwhelming majority of film service laboratory technicians in Hollywood, Calif. voted for the IATSE to act as their bargaining representative. They are now members of Laboratory Technicians Local 683.

- Our congratulations to the Frank M. Blakes, Local 224, Washington, D. C., on their 42nd wedding anniversary.

- Robert Greer, past president of Local 386, Columbus, Ohio, and president of the Columbus Federation of Labor, attended the AFL Community Chests and Councils' conference in Atlanta, Ga., as AFL representative of the Columbus Community Chest Staff.

- It is high time, we believe that due recognition is given to those IA men who consistently, year in and year out, give up much of their leisure time to bring a bit of cheer into the lives of the physically handicapped and the chronically ill. Last month in these columns we mentioned the fine work being done by the New York Local 306 Movie Social Club of Brooklyn in bringing entertainment to the crippled children of St. Giles Hospital, Brooklyn.

Now we're proud to tell of the volunteer project inaugurated May, 1936, by Abe and Ben Sherman, members of Philadelphia Local 307. Every Sunday for the past 17 years one of these brothers appeared at the Lucien Moss Home for Incurables in Philadelphia and put on a show for the shut-in patients. A complete feature film is furnished each week by Ben Amsterdam, president of Atlantic Theatres. Harry J. Abbott, 6th IA vice-president and president of Local 307, was instru-

The General Executive Board of the IATSE, after a week-long series of mid-winter meetings in Las Vegas, has empowered President Richard F. Walsh to "press to the utmost" the drive for Congressional action to stop the tax-dodging activities of American movie producers and players abroad.

The IA feels that if the tax rates are applicable to all U. S. citizens, the movie people will, of necessity, elect to confine their production activities to the U. S. (Hollywood), thus providing employment for many additional thousands of technicians.

mental in having the projection equipment donated to the Home. Thus, through the unselfish cooperation of all these fine people, the lot of the unfortunate shut-in is made a bit more bearable.

- Clyde Cooley, was recently re-elected to serve his 14th consecutive term as secretary of Local 343, Omaha, Nebr. Clyde is one of the best known IA men in the Middle West, having represented his Local at the last 10 IA conventions. In addition to his Local 343 duties, he holds the office of secretary-treasurer for the Nebraska State Association and edits the popular weekly column "Movie Operators," a regular feature of *The Unionist*, official publication of the Nebraska State Federation of Labor.

- Seven months' negotiations between New York Local 1 and the legitimate theatre operators were concluded recently with an agreement providing for an 8% increase in basic wages for

STAGE AND MOVIE STARS ADD GLAMOUR TO COLUMBUS LOCAL 386 CELEBRATION



A gala party marked the recent 34th anniversary celebration for Local 386, Columbus, Ohio. Among the invited guests present were officials of nearby IA Locals and the entire cast of the play, "Country Girl," which closed its engagement in Columbus that night. Shown standing in the top photo, left to right, are the following officials of 386 and guests: Willis Persons, sergeant-at-arms; Tony Albert, "Country Girl" stage manager; John Fitzgerald, IA representative; Robert Greer, president of Columbus Federation of Labor and former Local president; H. Meade Feathers, vice-president; Bill "Dutch" Weltz, recording-secretary; David Cornwell, secretary-treasurer; Donald V. Gardner, president; Calvin Beard, financial-secretary; Ned R. Welch, business representative, and Harold Farmer, member of "Country Girl" cast. Members of "Country Girl" are seated at the table, on the far side of which may be seen the stars of the play — Nancy Kelly, Dane Clark and Sidney Blackmer, fourth from left.

Shown in the bottom photo, left to right, are: Kenny Mason, treasurer, Local 823; Carl Young, business representative, Local 12; R. G. Neff, business representative, Local 349; Donald V. Gardner, 386; Phil Ryan, property man for "Country Girl"; D. R. Barnecko, secretary, Local 30 (Ind.); Ned Welch, 386; W. W. Hofferbert, Dayton, Ohio; Al Reid, carpenter, "Country Girl"; Harold Souder, president, Local 12; John E. Krebs, business representative, Local 327, and IA Representative John Fitzgerald.

Tax-Free Production Abroad is Reflected in Export Slump

U. S. exports of motion picture films and equipment in 1952 were valued at \$25,692,819, about 8% below the 1951 exports valued at \$28,053,500, it was announced today by Nat D. Golden, U. S. Dept. of Commerce. Noteworthy in this decline was the lower exports of *exposed feature films* and the drop in exports of all types of rawstock film except 35-mm positive. With the notable exception of 16-mm sound projectors, practically all types of motion picture equipment were exported at lower levels in 1952.

No. 1 men. In addition, the pact also provides for a retroactive increase of 5% to July 31, 1952, and for a 5% boost in overtime pay. The new agreement became effective February 16, 1953, and will run to July 31, 1955.

John C. McDowell, secretary, and business representatives Solly Pernick and John Goodson, served on the negotiating committee for Local 1; James F. Reilly, executive director of the League of New York Theatres represented the theatres.

- Harry Owen, member of Detroit Local 199 and projectionist at the Century Theatre, has recovered sufficiently from the broken neck he sustained in an automobile accident to have his neck braces removed.

- Rochester Local 25 (stagehands), with a membership of 55, donated \$311 to various worthy causes during its regular meeting last month. Mike Mungovan, business representative for the Local, revealed that the members unanimously approved motions from the floor to donate \$226 of this sum to the Will Rogers Memorial Hospital at Saranac Lake, N. Y.

- Ten sweeping amendments to correct the "oppressive" Taft-Hartley law were urged by George Meany, AFL president, when he appeared as the first witness before the House Labor Committee's public hearings on revision of the six-year-old Taft-Hartley law. Meany asked Congress to repeal such key provisions as the 80-day anti-strike injunction, the ban on the closed shop, the requirement that union leaders sign a non-Communist oath, and the provision that permits employers to bring damage suits against unions.

These provisions, and others, have

"placed intolerable restrictions upon the exercise of basic rights and freedoms by trade unions and their members just because they are part of organized labor," Mr. Meany asserted.

- The projection of 3-D films, particularly those "first-in-town" presentations, are netting the industry in general, the theatre, and the projection craft in particular, valuable publicity space on newspaper amusement pages. A few technical details as to the "how" of the process will do the trick, was exemplified recently when the boys at the Metropolitan Theatre in Boston (Local 182) grabbed important space in the *Boston American*. The crew: Paul Brown, Charles Jandruie, Harold Sheerer, Ernest Costa, and James Lyden.

- So-oo-oo . . . IP is proving to be a disruptive influence on the flow of regular business at Local Union meetings. So states Lester Barager, secretary of Rochester, N. Y., Local 253, in the course of describing elsewhere herein the wiring for 3-D installations.

- Face-to-face it's easy if not imperative to say nice things about a guy. But when such comments are made behind one's back—well, they must really like you! That's what happened at the recent 34th anniversary party of Local 386, Columbus, Ohio, when of the three honor guests—William Smith, Fred Hartwick, and George Halliday, all charter members of the outfit—only the latter was present. Halliday accepted the Local's gifts on behalf of his pioneer buddies from Nancy Kelly, star of stage and screen. Incidentally, Smith is the only man to hold a gold life-membership card in 386.

- New York Local 306 is bringing suit against the Loew and RKO circuits and the Radio City Music Hall in the Metropolitan New York area for \$3 million which the Local claims its members earned for uncompensated overtime work during a period extending back almost six years. About \$1 million is being sought from each company.

Herman Gelber, president of Local 306, states that this back pay is due projectionists for pre-show preparatory work estimated at between 15 minutes and one hour daily. Demands have been made over a period of years to reach an amicable agreement, he said, but it was impossible to reach a settlement.

Suit is being brought at this time because further delay would allow the exhibitors the protection of the six-year statute of limitations.

- Copies of a folder prepared by the AFL Research Department to help AFL unions—with escalator clauses in their contracts to shift from the old cost-of-living index to the new one, have been sent to officials of all AFL national and international unions. A letter accompanying the folder comments that the old Bureau of Labor Statistics Index will be continued for six months, in compliance with an AFL request for the continuance, in order to facilitate changes from the old to the new index.

IA ELECTIONS

LOCAL 249, DALLAS, TEXAS

Paul W. Humphries, *pres.*; Curtis Moore, *vice-pres.*; Harvey Hill, Jr., *rec.-sec.*; Earl Medlin, Jr., *fin.-sec.*; Earl Ballard, *treas.*; Harvey Hill, Sr., *bus. rep.*; G. L. "Pappy" Luther, Clarence Holt, *exec. board*; L. C. Clark, Sam Hoffman, and Jasper Barron, *trustees*.

LOCAL 343, OMAHA, NEBR.

A. P. Fell, *pres.*; Ora Farnsworth, *1st vice-pres.*; Howard Crossland, *2nd vice-pres.*; Clyde Cooley, *sec.*; R. V. Mortenson, *fin.-sec.*; Ross Hatton, *treas.*; Howard Jackson, *bus. rep.*; Mace Brown, Paul Pollard, Charles Craig, *trustees*; Al Frazier, *sgt.-at-arms*.

LOCAL 384, HUDSON COUNTY, N. J.

Frank Mandrake, *pres.*; Albert De Titta, *vice-pres.*; John Cantoli, *fin. sec.-treas.*; Ira Dulberger, *rec.-sec.*; Ralph De Mea, *bus rep.*; Vincent Saponar, *sgt.-at-arms*; Arthur McMahon, Frank Maurus, Charles May, *exec. board*; Jack D'Agostino, Edward Dougherty, Vincent Saltamach, *trustees*; Thomas Neathery, Alfred Schwartz, Joseph Greulich, Joseph Cantoli, Sr., Charles Anguisola, *sen. comm.*

LOCAL 712, OWENSBORO-HENDERSON, KY.

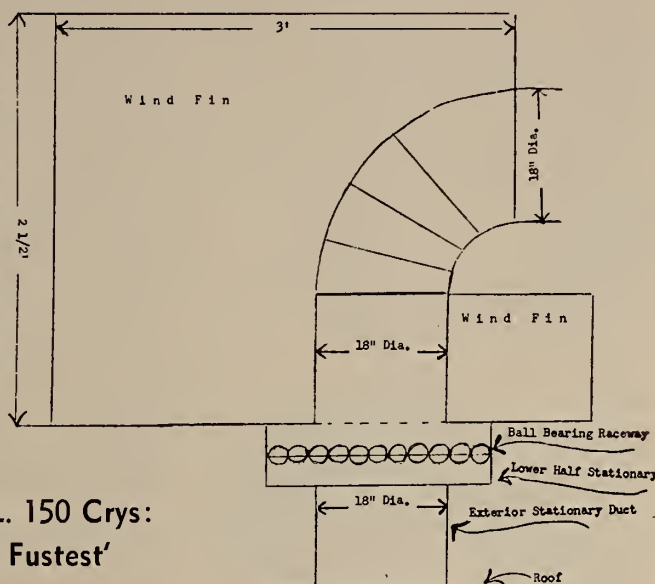
William Drury, *pres.*; Norman Brown, *vice-pres.*; Earl Hardin, *sec.*; William Stewart, *treas.*; William Cart, *bus. rep.*; Smith Ezell, Norman Brown, R. J. Berry, *trustees*; Kenneth Chinn, *sgt.-at-arms*. William Cart was reelected to a third term as *sec.-treas.* of the Owensboro Central Labor Union.

RCA Service For 116 Schine Houses

A comprehensive service and parts contract covering the 116 theatres of the Schine Circuit, Inc., of Gloversville, N. Y., and RCA Service Co. has been signed. Under the new pact, scheduled sound equipment service, emergency service, and sound parts coverage will be furnished to all theatres in the chain, located in Delaware, Kentucky, Maryland, New York, and Ohio.

Projection Room Ventilation

Reproduction of a sketch accompanying the recommendations of Los Angeles projectionist Local 150 for an improved means of exhausting noxious gases from projection rooms. Details of the hookup are given in the accompanying article.



Los Angeles L. 150 Crys: 'We Were Fustest'

PUBLICATION in IP last month of the article "Carbon Arc Gases, Dust: Addendum" (p. 12) occasioned a flurry of comment from the projectionist craft, not all of which, it must be said candidly, agreed with the conclusions reached therein. However, there was an overwhelming majority of approval for the premise that the major responsibility for providing adequate projection room ventilation rested with the exhibitor, who, in turn, must be prodded by vigorous action by officials of the organized craft upon state and municipal authorities.

Particularly pertinent was the communication from IA Local 150, Los Angeles, Calif., which directed attention to its plan for adequate room ventilation which was presented for and won the approval of the California State Federation of Labor some years ago. A resume of this plan, with a sketch, is appended hereto:

The Labor Code of the State of California adequately provides for the number of cubic feet of air circulation in projection, rewind and generator rooms of moving picture theatres.

There is no provision in the State Code to insure that a back-draft does not occur thereby bringing the carbon monoxide back into the projection room, and,

It has been found that the prevailing wind, if of great enough velocity and blowing in the direction of the exterior arc lamp exhaust stack, forms an impasse for the exhausted gases creating a back-draft and bringing the fumes back into the projection room.

The installation of automatic funnels or hoods, at the extremities of the exterior arc lamp exhaust stacks will prevent the return of carbon gases to the projection room. These devices are similar to the funnels used on ship-board to ventilate between decks. The funnels are L-shaped and finned so that the prevailing wind may rotate them 360 degrees.

They should be mounted on ball-bearings to allow for ease in rotation: in this manner the funnel is turned away from the direction of the wind, making it impossible for a back-draft to occur. This is an inexpensive installation and would remedy the situation.

In drive-in theatres, in most instances, the exterior arc lamp exhaust stack, or duct, is too close to the projection room ventilation intake duct, with the result that the lamp-house-exhausted gases are being drawn back into the projection room. The exhaust stacks, or ducts, should extend not less than 25 feet away from the projection room intake duct and be equipped with automatic directional exhaust hoods.

Technicolor Expands Services

Technicolor has installed additional color developing and printing equipment so that it is now prepared to offer a wider variety of services, including a processing of single-strip color negatives such as Eastman color, Ansco color, and others.

Technicolor clients may now employ Technicolor's three-strip process, the Eastman, Ansco or other single-strip color negatives, have Technicolor develop the negative, and will be offered a free choice among the various processes, either in negative or positive.

Services offered include Technicolor's

dye-transfer method, or the direct-positive type prints on Eastman, Ansco or other color stock.

Significant Savings Forecast

Thus, any saving made possible by the use of a single-strip color negative in a black-and-white camera is available to producers as part of the Technicolor process, whether the producer develops the negative or has Technicolor develop.

No matter which type of photography is employed, the producer may have his release prints filled with standard-dye transfer prints, which Technicolor feels excel in quality and in price, if his order is for the usual large number of prints required for feature-length films.

With its added machines and improved methods, Technicolor is able to serve producers, whether in flat screen, 3-D, Cinarama, or Cinemascope, with all of which Technicolor is working.

Big Drive-In Expansion Seen

Now that Spring is here, the drive-in theatre business is beginning to boom anew. This is expected to be an unusually big year because government restrictions on the use of building materials were lifted Jan. 1. The National Production Authority estimates that 1,000 to 3,000 new drive-ins will be in operation soon. There are already between 3,500 and 4,000 drive-ins.

The movies themselves are only a small portion of the drive-in's business and not only because the various refreshment and miscellaneous concessions can easily amount to 50% of the total receipts. The drive-in is operated as entertainment—total entertainment; while the movie is a feature attraction, it is by no means the only one.

The most flourishing market today for children's playground equipment is the drive-in. Swings, slides, merry-go-rounds, rides on miniature trains are standard equipment. Ezell Drive-Ins in Texas feature these playground facilities (free) in their advertising, plus free bottle warmers for baby while you enjoy your own meal, which is also obtainable at the theatre.

Catch-All Entertainment Package

What with bottle-warmers for the nipple trade, playgrounds for the older juveniles, dining facilities and even (in New Orleans) a special kiddy theatre where the small fry can sit in high chairs and watch 16-mm cartoons while mama and papa catch the main feature outside, the moviegoing pattern is nurtured with every modern convenience.

Some observers feel that the growth of 3-D movies and large-screen Tv, both of which pose difficult technical problems for the drive-in, might hinder the growth of the outdoor theatres this year; but another technical improvement may compensate. Using rear-view projection, some drive-ins will now be able to start their shows while fading daylight is still too bright for standard projection. This means that an extra show each night is possible, and this in turn means additional revenue.

SMPTE Screen Brightness Committee Report*

By W. W. LOZIER,
Committee Chairman

This report summarizes group progress to date and outlines some of our future plans.

1. **SUBCOMMITTEE ON METERS AND METHODS OF MEASUREMENT:** This group under the chairmanship of F. J. Kolb, Jr., has made a thorough study of the measurement of screen brightness and related factors. Specifications have been set up on the range of the variables which will need to be covered by various types of instruments. The report by this Subcommittee has been accepted by the full Committee and recommended for early publication in the *SMPTE Journal*.

2. SUBCOMMITTEE ON PROJECTION SCREENS: This group is engaged in the preparation of standards covering the brightness and whiteness characteristics of motion picture screens. The old War Standards of 1945 are being used as a basis of *departure*.

3. SUBCOMMITTEE ON ILLUMINATION PRACTICES:

This is a new group recently set up for the purpose of establishing recommended practices concerning distribution of illumination on the motion picture screens.

THEATRE SURVEY OF SCREEN BRIGHTNESS: The Committee has completed a survey of screen brightness and related information in 125 indoor theatres widely distributed over the U. S. and in 18 West Coast studio review rooms used for 35-mm motion pictures. These data have been reported at the two 1951 meetings of the Society,^{2,3} and have been published in the *Journal*. This survey has given us a good summary of screen illumination practices in a representative cross-section of the theatres in this country. This information is being used in our further activities looking toward improvement of theatre screen illumination.

The Committee hopes to survey a number of representative outdoor theatres during 1953 to obtain information on screen illumination practices in these installations.

REVISION OF SCREEN BRIGHTNESS STANDARD: The currently applicable American Standard on Screen Brightness, Z22.39-1944, has been modified⁴ to include only indoor theatres and therefore exempts outdoor theatres from the provisions of this Standard. The revised standard has been recommended to the ASA for adoption as an American Standard.

PREFERRED CONDITIONS FOR VIEWING
MOTION PICTURES: Our Commrttee has

concerned itself with the fundamental problem of determination and exposition of the preferred conditions for viewing motion pictures. The Committee has encouraged discussion of the history and important factors having technical bearing on this problem. A summary of these matters was published last year in the *Journal* by one of our committee members.⁵

The Committee arranged and sponsored a Symposium on Screen Viewing Factors at the Spring, 1951 Convention of the Society. The papers presented at the symposium were published in the September, 1951 *Journal*⁶ and contain much information pertinent to the determination of preferred viewing conditions. There are indications that our efforts are bearing fruit and that new interest has been stimulated in the experimental determination of some of these factors and further important revelations can be expected.

References

1. W. W. Lozier, Chairman, "Screen Brightness Committee Report," *Jour. SMPTE*, 54: 756-757, June 1950.
2. W. W. Lozier, Chairman, "Report on Screen Brightness Committee Theater Survey," *Jour. SMPTE*, 57: 238-246, Sept. 1951.
3. W. W. Lozier, Chairman, "Further Report on Screen Brightness Committee Theater Survey," *Jour. SMPTE*, 57: 11-15, Nov. 1951.
4. "Revision of Screen Brightness Standard," *Jour. SMPTE*, 58: 452, May 1952.
5. F. J. Kolb, Jr., "The scientific basis for establishing brightness of motion picture screens," *Jour. SMPTE*, 56: 433-442, April 1951.
6. Symposium on Screen Viewing Factors (6 papers), *Jour. SMPTE*, 57: 185-237, Sept. 1951.

3-D Presentation Notes

By LESTER BARAGER

Secretary, IA Local 253, Rochester

First, I want to register a mild squawk: the order of business at our last regular meeting was hampered

somewhat by the extended discussion by the members of the 3-D data which is appearing in IP. All to the good, however.

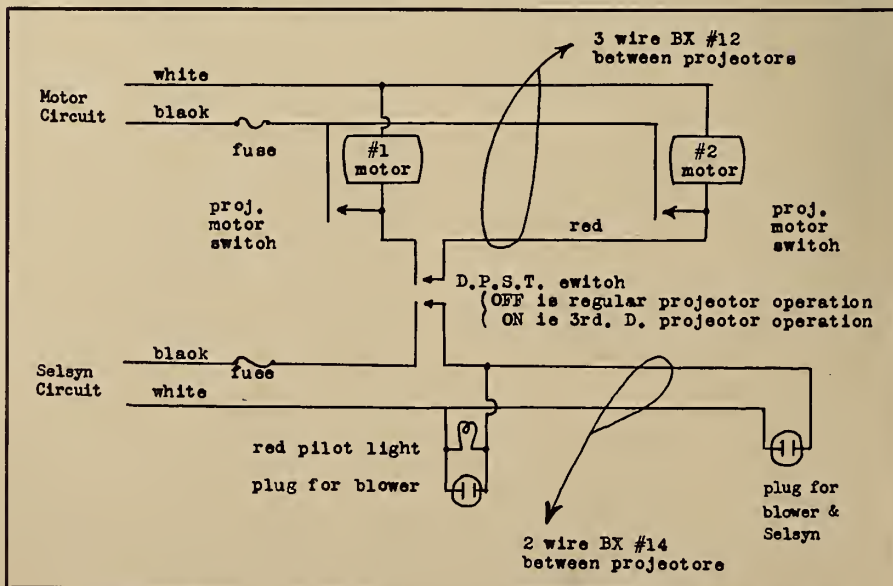
In order to install the large upper magazines for 3-D pictures at the Paramount, Rochester, it was necessary to cut out a section of the ceiling above the projectors, this projection room being suspended below the front of the balcony and having a slanting ceiling. Structural girders near the light beam prevented moving the projectors back.

Through the courtesy of Ira Epstein, city manager for Paramount, members of Local 253 were given the use of the Paramount theatre one morning for a demonstration of the 3-D equipment installed there for the showing of N-V's "Bwana Devil". Lester Barager, explained the equipment set-up, and then Louis Levin and Fred Boekhout projected the alignment test film and the first section of "Bwana Devil". Several more 3-D installations are slated for Rochester houses, and this demonstration prepared the men for their new duties and showed them the mistakes and pitfalls to avoid with this new media.

For the second week's run of "Bwana Devil", it was moved from the Paramount to the Regent theatre. Prior film commitments necessitated this switch. All of the 3-D equipment was moved over also, and it was dawn when the weary projectionists completed their trial screening.

Cinema Research 35-MM Color Dupes

Cinema Research Corp. announced in Hollywood that it is now producing both Eastman and Ansco duplicate 35-mm color negatives.



Wiring diagram for 3-D projector interlock at Rochester, N. Y., Paramount theatres.

* Presented October 9, 1952, at the Society's Convention at Washington, D. C.

National Carbon Co.'s Two New Improved Carbons

National Carbon Co. announces two new projector carbons. One is a regular high-intensity carbon for use in condenser-type, high-intensity lamps in the larger theatres which do not require the full maximum light of National "Hitex" carbons. The other is a new Suprex positive projector carbon, for use specifically in all mirror-type, variable-feed-ratio lamps.

The larger of the carbons is designated as the new 13.6-mm, 22-inch Regular H-I Positive carbon, designed for operation between 125 and 160 amperes to provide a much wider current range than previous carbons for similar service. Important advantages are: 15% or more longer life with equal light at the same current, a cooler light giving less heat at the aperture, and lower carbon cost per hour of operation.

The cooler light has considerable significance because it permits this carbon to be burned at 10 amperes higher current to give approximately 10% more light with no increase of heat at the film aperture.

Infra-Red Radiation Down

Due to the favorable alteration in the excitation and radiation processes taking place within the high-intensity crater, these changes are brought about by proper selection of materials and method of manufacturing. The visible light is emphasized at the expense of the infra-red radiation.

This improvement in high-intensity carbon operation is important to the projectionist because the increase in visible light is obtained without the use of heat filters and without the additional energy required at the arc to compensate for the losses in total energy characteristic of such heat filters.

The shipping case is identified by the letter "P" after the lot number on the end panel. Orders should be placed through distributor channels by Catalog No. L0115.

The other addition to the National Carbon line, designated as the 7-mm Suprex positive carbon, is rated at 42-50 amps, and is said to give more light than its predecessor at the same rate of carbon consumption. In addition, the new carbon is stated to be unequalled in uniformity and to operate with an arc stability far superior to any other 7-mm carbon, giving a brighter and whiter and cooler operating lamp. It is available in two sizes, 7mm x 12" and 7mm x 14".

This new carbon may be ordered through regular distributor channels by Order N. L0521 for the 7mm x 12" and L0525 for the 7mm x 14" size. The present 7mm "Suprex" carbon will continue in use for 1 Kw fixed ratio lamps.

Lens Showmanship



f/1.9

**Projection
Lenses**

...and "Showmanship" includes your plant equipment.
Super Snaplite f/1.9 Projection Lenses give your patrons maximum viewing satisfaction.

For Better Showmanship and
Better Boxoffice use Super Snaplites.
True speed of f/1.9 in all focal
lengths up to 7 inches.

Ask for bulletin 207 and 209.

You get more Light
with Super Snaplite

KOLLMORGEN

Plant: Northampton, Massachusetts

Optical
CORPORATION

NEW YORK OFFICE: 30 CHURCH ST., NEW YORK 7, N. Y.

Monthly Chat: Panoramic and 3-D Films

(Continued from page 3)

nurtured by the economic milk of the grass roots.

Cinerama is a marvelous technical achievement, but may God help us if the Grand Canyon crumbles and the canals of Venice run dry—this after an investment of \$25,000 per theatre! Let's not forget that this system requires for its visual impact extensive construction work (shall we say *destructive*?) for stereophonic sound.

How many theatres in America today can find sufficient physical space to push their rear walls back 10% and extend their sidewalls 20%? Cinerama is a great show, if only we could afford it. And we haven't yet touched upon the matter of limited sight lines which, as we see it, confine wholly acceptable viewing to about 25% of the total seating of the average motion picture theatre in America.

We come now to the much publicized process of 20th Century-Fox—Cinemascope. This baby, in the taking process, compresses on the conventional 35-mm film frame a wide-angle image and then proceeds, by means of a "special projector optical attachment," to expand this image on a wide screen. This prospect is very entrancing, according to the eminent and much publicized Darryl Zanuck, production head of 20th Century-Fox, who has heretofore displayed both a minimum interest in and knowledge of the technical processes of the motion picture industry. Mr. Zanuck made the headlines in *Life* for March 9 last by scoffing, for an international audience (as he well knew) at 3-D pictures. Significantly, however, neither Mr. Zanuck, in his wisdom, nor any other responsible executive of 20th Century-Fox has deigned to give the *motion picture press* a single paragraph of technical data anent the Cinemascope process. We're only their customers.

Wide-Screen Optics Data

Well, IP will try to compensate for the innate shyness of these ivory-towered executives by stating a few facts.

Fact No. 1: The Cinemascope process is essentially a wide-angle lens deal. This is what IP thinks of any and all wide-angle lens systems:

In order to equal the screen width used by Cinerama by using one projector alone (Cinemascope-20th Century-Fox) a projection lens covering an angle of roughly 50° to 60° must be used. The amount of light projected on the screen is the amount of *light available at the aperture plate spread over the size of the screen*. Cinerama is using three projectors; but if one projector *only* be used,

the amount of light received on a screen of *equal size* to the Cinerama screen will be approximately 30%.

Any attempt to increase the light by increasing the speed of the lens would be useless, since we are already using lenses which *fully* utilize the available light at the aperture plate. The problem, in a nutshell, is to use a lens with a covering angle of more than 50°, a speed approaching F:1.2 and a projector with the lamphouse system capable of filling this high-speed lens.

Such a system does not exist today, and it is so far removed from any normal system now in use, that we doubt that anybody as yet has approached the solution.

Illumination Sacrificed

Normal range of standard projection lenses have a speed of F:1.9, with maximum angle to approximately 16°. Tessar-and-Cooke-type lenses, which have angles of 45° to 50°, are made with speeds of about F:3 to F:3.5. As the covering angle increases, the speed decreases until we reach aerial photographic lenses which cover up to 150°, but at speeds of F:12 to F:20. The conclusion, therefore, is that it is possible to make a wide-angle lens *only* at the expense of illumination.

How much illumination can be regained by redesigning the lamphouse system and by increasing the speed of the lens at the expense of the *quality* of the picture, is anybody's guess. For instance, condenser lenses have speeds of F:1, but they are not fit for projection purposes. How far one would go in accepting deterioration of the image for the sake of more illumination is a question of choice.

It appears to us that the so-called wide-screen system using only one projector with a wide-angle lens will be only

a poor imitation of the Cinerama system, using *three* projectors (light sources).

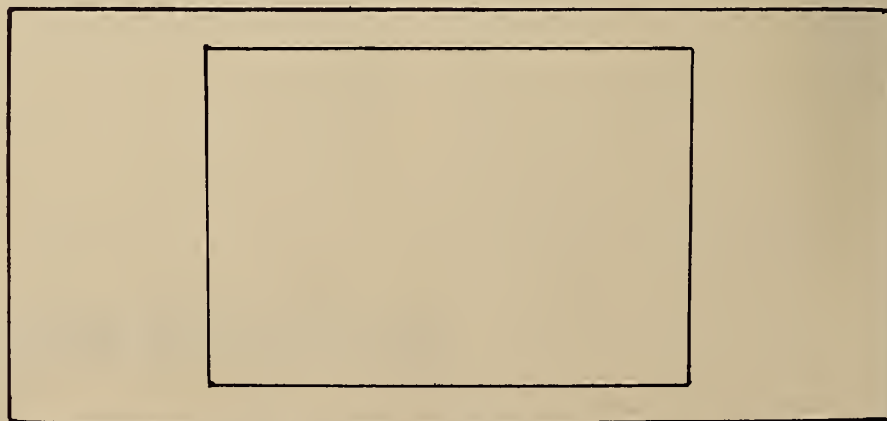
We may be wrong about this Cinemascope process; but if Mr. Zanuck and cohorts would display a greater affinity for their own motion picture trade press instead of staging a love duet with *Life* magazine, the exhibitors and projectionists who are wondering about the future of the business which has supplied Mr. Zanuck and company with such princely stipends through the years might be more appreciative of this "revolutionary" process.

Any time that 20th Century-Fox is willing to make a few sound-offs anent the various aspects of the Cinemascope process which are of prime interest to the exhibition field, our ears are flapping. Of particular interest to us will be data bearing on the means whereby 20th Century-Fox purposes increasing the projected light from 6 foot-Lamberts to a level approximating the 15 foot-Lamberts now regarded as the minimum reflected light level for projection screens. This story we want to hear.

3-D Process Less Risky

There now remains only to consider the current 3-D process which, while by no means new, serves to effect the *true* placement of things in space. There is no question but that 3-D provides intimacy supreme, the legitimate successor in cinematic form of the legitimate theatre.

Economically, this process involves no substantial investment by producers, equipment manufacturers, or exhibitors. Whether the paying patron will accept the enforced use of viewing spectacles is a question that only time can answer. But there is no question that this art-form, cinematically speaking, has and probably will continue for an indefinite period of time to pump red blood-cells in the form of box-office dollars into the somewhat



20th Century-Fox's Cinemascope process: an "anamorphic" lens squeezes the wide image (outer border) onto conventional 35-mm film (inner border) which, by use of a special projector-attached lens, expands the image to twice the size *in width* so as to offer a breadth of screen image represented by the elongated image shown above. In short, double double-talk via wide-angle optics.

anaemic exhibition branch of the industry.

Of course, 3-D films will also cost the exhibitor money, because for fulfillment of its dramatic impact it will require stereophonic sound, with its extensive equipment additions to and wiring alterations for existing theatres. Case in point is the work being done now at the Paramount Theatre (N. Y. City) for the forthcoming showing of Warners' 3-D "House of Wax." This job will probably run to more than \$5000 for the stereophonic installation alone. That it will add to the dramatic impact of the film is unquestionable; but whether it will pay off in the long run is a question to which we hope some enlightened reader will give us the answer.

Setting down the foregoing observations has not been an altogether painless chore for IP, because it realizes that its two real friends of long standing — projectionists, with enhanced prospects for increased manpower, and equipment manufacturers who will find the rain of new equipment orders particularly beneficial after so many drought-ridden years particularly palatable—might be scared off the reservation.

While apologetic in this respect, IP can do no other in view of its outstanding

record over the years for plain speaking: the facts have overtaken us.

RANDOM NOTES: Lest the theatre field get too cocky, IP *knows* that the Tv boys can at anytime they please (the FCC approving) bring *both* color and 3-D right into the home. This is another economic consideration for the downtown de-luxer as well as for the Rex Theatre on the corner.

Wide-screen presentations have *always* been a cinch for any smart projection man. Two such veterans—Harry Rubin, of United Paramount, and Allen G. Smith of National Theatre Supply Co.—are doing the job right now on Broadway, N. Y. By the simple expedient of filing the aperture plate, these boys are adding width to a regular "flat" release. Rubin, master of the Magnascope process for 25 years, is getting 10 feet extra width for the forthcoming Warner's 3-D "House of Wax," together with stereophonic sound emanating from *four* magnetic sound tracks. "Smitty" did the same thing at the Rialto Theatre.

Significantly, both these veterans spurned the Hollywood suggestion for a 2½ to 1 aspect ratio for the projected image in favor of the more sensible 2 to 1 ratio proposed by IP last month.

20th Century-Fox agents talk glibly

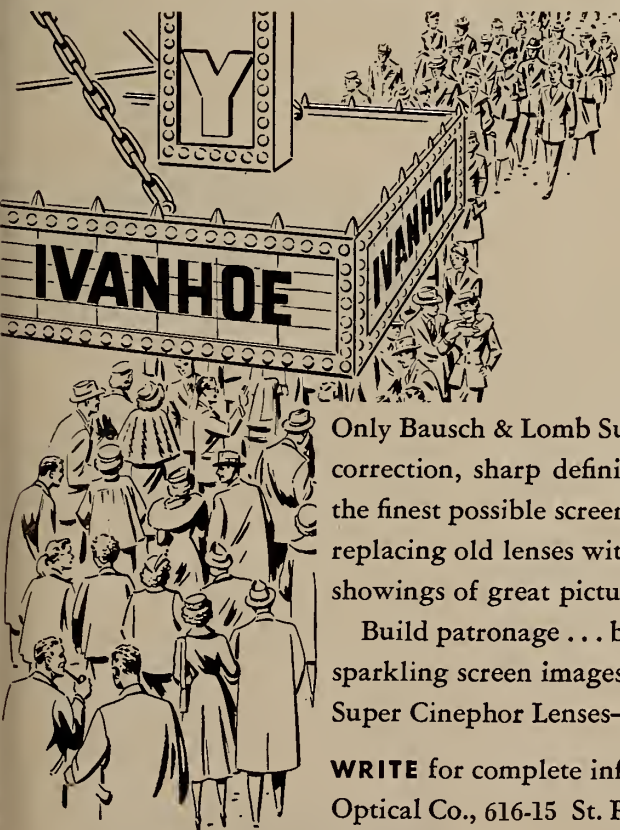
about having 120 lenses ready for the impending Cinemascope showings, a phenomenal achievement when it is known that there have been made, to date, only two sample lenses by American manufacturers.

"Bwana Devil," which gave original impetus to 3-D, was of such story and production quality as to scare the wits out of Hollywood. Paramount was so steamed up at the possible unfavorable box-office reaction of "Bwana" as to precipitately stage a special N. Y. showing of *rushes* from its uncompleted top-budget feature "Sangaree." In terms of possible 100% production technique, IP rates "Bwana" at 25%, "Sangaree" at 60%, and the forthcoming "House of Wax" at 75%. "Wax" is a natural for 3-D.

As for the drive-in theatres, these guys are really in a tough spot. Already straining their ribs for more light, the advent of 3-D films will really put them on the spot.

IMPORTANT: 3-D spectacles are *positively not* suitable for use as sun glasses. Every theatre should go to extreme lengths to acquaint their patrons with this fact, even *via* the special screen trailer route.

—JAMES J. FINN



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AMERICAN LABOR MOVEMENT

(Continued from page 13)

tion of organizing activities, and general supervision over local union practices in admitting new members, collecting dues, and handling finances. Apprenticeship regulations, intraunion grievances or disputes, and strike action also fall within the scope of union administration.

The degree to which "headquarters" exercises control or supervision over these matters varies. Some unions are

highly centralized with many policies determined and functions carried out by the parent national union. Other unions prefer to leave all except major policy matters to their locals. The extent to which collective bargaining is carried on at the national or local level often is a factor of importance in determining the degree of local union autonomy.

Normally the convention, composed of delegates representing the membership, is the highest policy-making body of the union. Of 208 national and international unions surveyed in 1949, 57 scheduled conventions annually and 72 biennially. Eighteen unions met every 3 years, 28 every 4 years, and 13 at 5-year intervals. A few unions determined their convention dates through referendum votes of their membership. Less than 10 made no specific provision for holding a convention.

Organizing the South

Membership drives are usually planned and supervised by the central offices of national unions, although they are of necessity carried out at local levels. Most unions launched intensive membership campaigns as wartime pressures subsided. In the spring of 1946, both the AFL and CIO renewed their organizing activity in the South, recognizing that so long as this great area remained relatively unorganized, the strength, if not the existence, of unions in other regions was threatened.

This was particularly true of the textile, apparel, and hosiery unions. In the words of Philip Murray, CIO president, "the South had to be organized in order to maintain a healthy national economy." Various unions reported, however, that employer opposition and difficulties in securing a favorable public opinion in the area retarded the recruitment of new union members and dampened the initial success of the drive in the South.

Educational facilities are provided by many unions. Certain craft unions, in

particular, support trade schools to help members develop or improve their industrial skills. Other educational programs conducted as part of regular union meetings or in special classes of "institutes" have a more general purpose. Lectures, discussions and moving pictures are the methods of instruction commonly used.

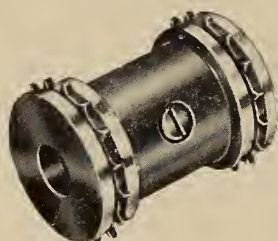
Some union educational effort is specifically aimed at training officials in handling routine union problems. For example, unions frequently provide special instruction in accounting methods for local treasurers or in techniques of handling shop grievances for shop stewards. Classes are provided also for the study of parliamentary law, public speaking, and American Government and democracy.

Most unions publish newspapers or journals. These range in size from small leaflets designed solely to keep their members aware of the union's activities to full-size magazines with special departments and articles to help the members interpret vital national and international issues. These several hundred weekly and monthly publications are official organs of local and national unions as well as of the central CIO and AFL organizations. Unions publish also a wide variety of pamphlets and special reports in connection with their educational, political, and organizational programs.

[TO BE CONTINUED]

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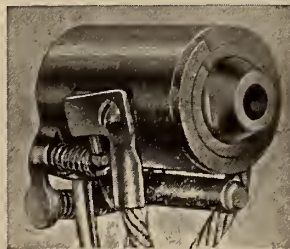
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75th Ann'y of the First Dynamic Loudspeaker

THE first patent on a dynamic loudspeaker was issued to C. H. Siemens on December 10, 1877, states *Audio Engineering*, Feb. 1953. It is British patent No. 4685, class 40-IV. It is interesting that this loudspeaker was developed long before there was an amplifier to operate it and before the days of the phonograph and radio. It was to be used in telephone equipment.

As shown in Fig. 1, two horseshoe magnets were used, one inside the other, to produce the magnetic field. One leg of the magnet was longer than the other and a hole was drilled in it slightly larger than the voice coil. A hollow pole piece was then placed inside the voice coil and extended to complete the circuit to the other leg of the magnet. The voice coil was wound on a form which was connected to the trumpet-shaped parchment cone.

The outer edge of the cone did not have the flexible corrugations used to-

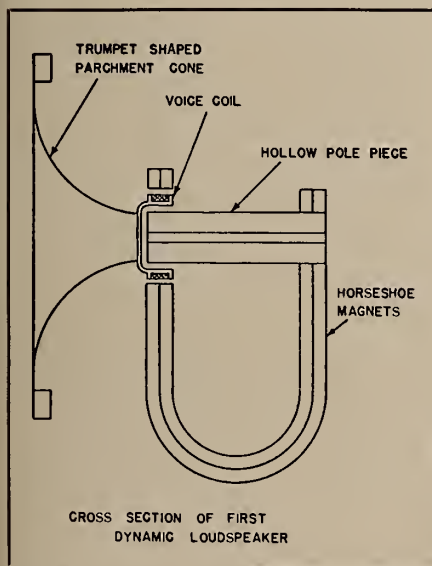


FIG. 1. The loudspeaker set-up which was covered by Siemens' 1877 patent.

day, but because of the flatness at that point was fairly flexible.

Limited Degree of Change

It is surprising that modern loudspeakers have not changed very much. We have improved the magnet structure by using more powerful permanent magnetic materials and have added a more flexible rim suspension to lower the resonant frequency. The first design operated with an enclosed back with a compartment the diameter of the cone and extending back as far as the voice coil. Now we use a much larger acoustic enclosure.

As Chester W. Rice said to Edward W. Kellogg, during their development of

the modern inertia-controlled loudspeaker nearly 50 years later (1925),¹ when they discovered that one of their ideas had been anticipated, "The ancients stole our invention."

¹ Chester W. Rice and Edward W. Kellogg, "Notes on the development of a new type of hornless loudspeaker," *Jour. A.I.E.E.*, vol. 44, pp. 982-991; Sept. 1925. pp. 1015-1020.

East Coast (N. Y.) Video City Planned

Construction will begin soon on a giant new East Coast Television City at the old World's Fair site in Flushing Meadows, Queens, N. Y. When completed, studio facilities will be available to video networks and motion picture companies on a rental basis. The land is owned by the City of New York, but the building and equipment will be the property of a private corporation.

3½ Million/sec. High-Speed Camera

A new ultra-fast camera developed by the University of California's Los Alamos Scientific Laboratory operates at speeds up to 3½ million frames a second. The camera is a continuous-writing, mirror type and is useful primarily for recording high-speed events that are self-luminous or illuminated by very intense explosive light sources.

NEMA Catalog of Science Films

National Electrical Manufacturers Association has a 56-page, 1952 catalog listing "16-mm Films of Electrical Significance." A total of 409 16-mm films is listed, all specially selected "for their educational value in the electrical field." The catalog gives complete information, so far as available, as to type of print, color or black-and-white, sound or silent, producers and distributors, sales or rental rates, release dates, running time, educational level, and a brief description of the treatment. For example, page 25 of the catalog lists *How Motion Pictures Move and Talk*, coded as suitable for all levels from junior high school up through college and adult education, running 11 minutes, sound, black-on-white, sold at \$45.00 and rented at \$3.00.

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Motiograph Improved In-Car Speaker

Motiograph is now offering an improved version of its De Luxe series of in-car speakers. Notable among its features is a full magnet, 5-inch diameter speaker unit, said to be 20% larger than that used in most in-car speakers, and multi-tapped transformers which permit exact matching of the speakers and the amplifier circuits of any sound system.

A new brochure describes this speaker and such accessories as ramp switching panels, record players, microphones, concession stand and outdoor seating area speakers. Address 4431 W. Lake St., Chicago 24, Ill.

Home Tv Splurge Unabated

Year-end (Dec. 1952) statements by RCA top executives included much data of interest to those in competitive entertainment fields. For example: during 1952 more than 6 million Tv receivers were produced; Tv homes increased from 15 to nearly 21 million; 117 Tv stations were on the air by mid-December, and construction permits had been granted to 135 others.

It is expected that more than 150 addi-

tional stations will go on the air during 1953, adding another 5 million families to the Tv service range. Currently 47% of the families in the U. S. have Tv sets, and over 65% of the population is within range of one or more Tv stations. Further progress has been made with the compatible color Tv system, and 3-D color Tv is expected to be perfected during 1953.

Add to Nation-Wide Relay Network

During December last, three links were added to the nation-wide radio relay network, providing expanded facilities for telephone message and Tv service. An additional west-bound channel has been placed in service between Chicago and the West Coast on the trans-continental route. This channel parallels existing radio relay facilities, which are routed to the Coast by way of Omaha and Salt Lake City.

On the Pacific Coast, two additional channels have been opened, one northbound and one southbound between Los Angeles and the San Francisco area. The northbound channel originates at Los Angeles and it is routed to San Francisco via Oakland. The southbound channel connects Oakland with Los Angeles. Both of these channels are joined to the transcontinental group opened by the Bell System on August 17, 1951.

A microwave installation making network Tv service available to York, Penna., has been placed in operation. Network service has also been made available to Atlantic City, N. J., by radio relay out of Philadelphia. With the addition of these two facilities, network programs are now available to 114 television stations in 71 cities.

U. S.-Canada in Aluminum Trade

At the request of the U. S. Government, the British Govt. and the Aluminum Co. of Canada have agreed to an arrangement which will supply this country with an additional 44 million pounds of aluminum for delivery during February and March, 1953. If Britain desires, U. S. producers will repay the tonnage during 1954-55.

New Cincinnati Supply House

Theatre Equipment Co., of Toledo, Ohio, has opened a branch office under the same name in Cincinnati at 1714 Logan St. It will be managed by Orville C. Wells, who

has had many years of experience in the equipment field by reason of extensive work in sound engineering and drive-in theatre construction. He was formerly associated with National Theatre Supply and later with United Theatre Supply, of Miami.

All nationally known supplies will be stocked at Cincinnati, including Strong lamps and rectifiers, Century projectors, National carbons, Eprad speakers, and 3-D projection equipment.

OBITUARIES

MILTON H. BELL, 51, and OLIVER T. GRIMES, 49 both members of Local 287, Beaver Falls, Penna., died within 24 hours of each other. Milton Bell joined the Local back in 1926 and worked with the regular projection crew at the Granada Theatre from the day the theatre opened in 1929 until 1950, when illness forced him to retire. Oliver Grimes, a member of the Local since 1944, took over at the Granada upon Bell's retirement and held the job until he succumbed to a heart attack on New Year's eve.

BERRY VANN BROCK, vice-president of Local 413, Gadsden, Ala., died suddenly last month at the age of 55. He joined the Local in 1920 and at the time of his death had been employed as projectionist at the Princess Theatre.

Philadelphia Local 306 lost two of its long-time members in the recent deaths of SOL BORMAN and MORRIS KORF. Sol Borman, who died at the age of 56, held membership in the Local for the past 30 years and had been in ill health for some time prior to his demise. Morris Korf was 72 at the time of his death and was a member of 307 for 34 years. He, too, had been ailing for quite some time.

GEORGE L. HOWARD and JOHN E. LYONS, members of Local 650, Westchester County, N. Y., died last month. Howard passed away on February 9, and Lyons on the 22nd.

JOE BREWER, member of Local 249, Dallas, Texas for the past 40 years died recently. Brewer was a former official of the Local, having held various offices.

JACOB EDWARDS, 64, member of Detroit Local 199, succumbed to a heart attack in the projection room of the Michigan Theatre.

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TYPES OF THEATRE SOUND REPRODUCERS

(Continued from page 8)

gear is driven by a pinion attached through a flexible coupling to the motor shaft.

Combination Visual-Sound Unit

The writer has long been an advocate of *combined* projection and sound-reproducer units. It has seemed to him unnecessary to use "silent" picture mechanisms mounted upon separate sound-heads, when the sound reproducer could easily be incorporated into the design of the picture mechanism. Actual operating experience on a combination picture-and-sound mechanism of American manufacture, however, has proved to him that such combination mechanisms will never be popular with American projectionists until the manufacturers of these machines come to realize that *operating ease* means a great deal to the fellows who have to operate such equipment daily, year in and year out.

Sound reproducer units so diminutive that they cannot be threaded with ease will never gain widespread craft acceptance. While the writer still believes that picture and sound mechanisms ought to be combined into a single unit, he reluctantly admits that he is not too favorably impressed by efforts made in this direction up to now.

Soundhead Optical Components

Standard soundhead optical units contain three elements: a slit, a condenser lens for focusing the exciting-lamp filament on the slit, and an objective lens which focuses a reduced image of the slit on the soundtrack.

The slit-image is a line of light 0.084 inch long and, formerly, only 0.001 inch in width. The narrower the slit-image, the higher the cutoff frequency, and hence (it would seem) the more efficient it will be for reproducing the sound recorded in the soundtrack. It has been found, however, that better results are obtained with a slit-image 0.00125 inch wide. The wider slit-lets through 25% more light from the exciting lamp, thus increasing photocell output by the same amount. This enables the projectionist to use a lower volume-control setting to obtain the same loudness of sound, but with less surface noise.

Since the cutoff frequency of the

0.00125-inch (1¼-mil) slit is well above the highest response of the sound system (between 8,000 and 9,000 cps), use of the wider slit results in an attenuation of the higher frequencies too slight to matter.

The cutoff frequency for a slit-image is the lowest one which produces no change in the intensity of the scanning beam when a recording of that particular frequency passes through the slit-image. This occurs when one complete cycle of sound ("double vibration") as photographed in the soundtrack exactly fills the scanning beam. Assuming a standard 35-mm film speed of 18 inches per second, the cut-off frequency is 18,000 cps for a 1-mil slit-image; 14,000 cps for a 1¼-mil slit-image.

Establishing Correct Focus

When an optical tube is correctly focused, the variations of light and dark in the soundtrack cause the scanning beam to flicker uniformly on the cathode plate of the photoelectric cell. In fact, the "flicker test" may be used for focusing soundhead optics. A test

film having a 7,000- or 9,000-cps track should be threaded in the sound-head, with the exciting lamp turned on, and the projector turned *very slowly* by means of the handwheel.

Then observe the light falling on the

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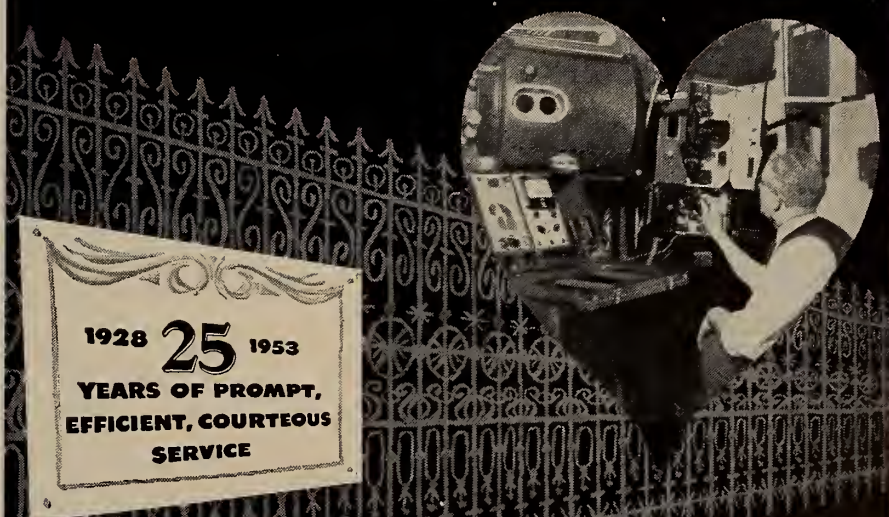
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photocell cathode—the light-sensitive plate of the cell—to find out whether or not the scanning beam is being correctly modulated, the light flickering uniformly without any shadow-bands moving up or down. If the photocell cathode is difficult to see (it is brownish in color), the cell may be taken out and a white card of the proper size used in its place as a screen.

Now, if shadow-bands that move upward are seen as the film is slowly pulled downward, the optical barrel is a trifle too close to the film. The barrel should be moved toward the exciting lamp, away from the film. If, on the other hand, shadow-bands that move downward, in the same direction as the film, are observed, then the optical unit is too far away from the film. It should then be moved away from the exciter, toward the film.

Sound service engineers sometimes use this flicker test for adjusting the optical unit; but more often they attach an A.C. milliammeter ("output meter") to the amplifier and move the unit back and forth until the needle of the meter shows that the greatest output is being obtained while a high-frequency test film (usually in the form of a continuous loop) is run at normal film speed. Due to peculiarities in the design of certain optical tubes, several "peaks" are obtained on either side of the middle, and greatest, peak indicating maximum output. The engineer guards against setting the unit at one of the minor peaks.

P. E. Cell Sensitivity

It is truly amazing how little light is required to excite p. e. cell. When a 50-watt (5-ampere, 10-volt) exciting lamp is used, the amount of light which passes through the film to the photocell cathode averages only about 1/2 lumen. To demonstrate the sensitivity of the photocells in your sound equipment, turn on the system, remove the cover from the photocell in one of the soundheads, and shine a flashlight on the cell. A ringing sound will be heard whenever the flashlight is tapped, this

being caused by vibration of the flash-light-bulb filament.

This simple demonstration also serves to remind us that good sound cannot be obtained if the exciting lamps are not properly and solidly mounted, or have sagging filaments, or are blackened by age. Old and defective exciters should be replaced before they burn out. When replacing exciting lamps, take care to adjust the sockets so that the maximum amount of light is obtained on the photocell cathodes.

[TO BE CONTINUED]

Automatic Digit Recognizer

An electronic device that can understand and intelligently react to spoken numbers has been built at Bell Telephone Laboratories. Named "Audrey," a contraction of "automatic digit recognizer," it is a special circuit that can automatically determine which of ten numbers, from 1 through 0, has been spoken into a telephone.

In its present form, the device responds by flashing an appropriate light, but it may equally well control other operations, such as dialing mechanisms. Ultimately it is hoped to extend the device's vocabulary to include additional sounds—words other than numbers—and it is expected that the device may even be taught to say some words on command.

'Memory' and Matching

The newly constructed recognizer operates on a principle of memory and matching. It listens to the human voice, then sorts the speech sounds into electrical categories that

conform in their own medium to sound-wave patterns. These categories are analyzed by matching against a memory cell containing standard reference patterns already set up electronically. When the standard pattern is found which best matches the electrical pattern of the spoken number, the appropriate light flashes on.

When the device is adjusted for best performance with a particular speaker, it operates with high accuracy, but it is not yet in a state to answer reliably to a wide variety of talkers unless it is readjusted for each one. It will not tolerate careless enunciations or accents.—BELL LABORATORIES RECORD.

New ASA Still Camera Shutters

Four new American Standards covering still camera shutters provide users with better knowledge of what to expect from their shutters in the way of exposure time. Recently approved by the American Standards Assoc., the new standards are aimed primarily at improving the uniformity of shutter speed markings and exposure time performance. They define a minimum number of terms, specify test procedures acceptable for measuring basic quantities, and establish performance tolerances.

The four quantities defined in the standards are: Total Open Time, Efficiency, Effective Exposure Time, and, in the case of between-the-lens shutters, their Maximum Opening.

Two of the standards give exposure-time markings for between-the-lens shutters and for focal-plane shutters and select scales with which shutters should be marked. Test procedures capable of measuring the quantities defined, under controlled laboratory conditions, are covered in the other two standards.

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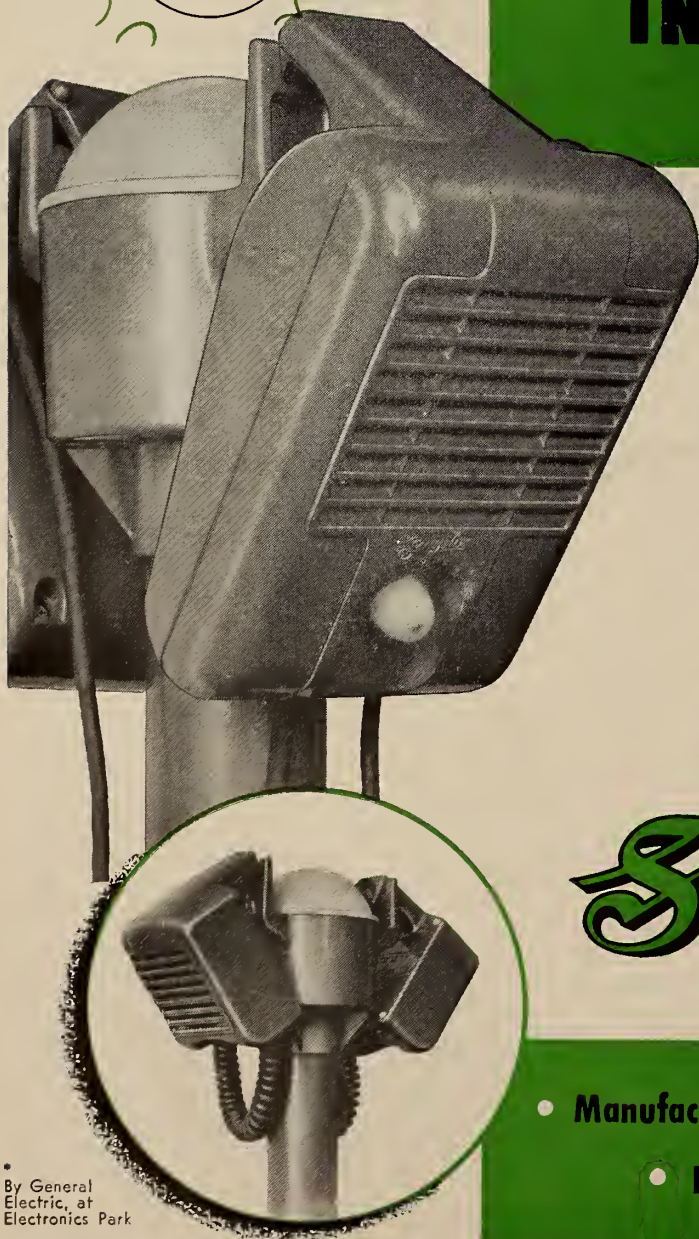
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APRIL

1953

VOLUME 28



NUMBER 4

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JAMES J. FINN, *Editor*

Volume 28

APRIL 1953

Number 4

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MONTHLY CHAT

SINCE IP is the accredited source of material quoted some 20-odd times in the technical and lay press during the past two months (to the dismay of some people encompassing the range from "executive" Hollywood studio personnel to projectionists in a theatre in Hartford, Conn.), it will herein suppress its subjective thoughts in favor of an objective factual report as follows:

There never was, and likely never will be, a run-of-the-mill, 3-D motion picture with stereophonic sound and other conceivable gadgetry, *improperly* applied, that could compare in terms of *entertainment value* with a straightforward "flat" presentation of a good basic theme given the full benefit of long-existent technological know-how. One has only to take a look (and if you are the appreciative kind, a second and third look) at the current M-G-M offering, "Lili," a work of pure cinematic art in conception and execution—story, acting, production values, including color and sound—which to our mind is a milestone along the road of technological progress.

Relative to the world-premiere presentation of Warners' "House of Wax," the technical aspects of which are detailed elsewhere herein, we make purely objective observations, as follows:

3-D motion pictures are designed to be "realistic" but, true to form, Hollywood "murdered" it by piling realism upon realism through the medium of a straight-away "horror" story. NOTES: The low-key lighting is *too* low; the disposable individual viewing spectacles are just plain lousy; the stereophonic sound, magnificent in conception, was not an aid but rather an *imposition* on the auditor; the picture proportions (standard 3 x 4) are dead wrong. The viewing resulted in *definite* eyestrain to the point where all ten people in a given party were *relieved* when the showing was over.

As we saw it, "House of Wax" was not entertainment but an imposition on the paying patron. This "appallingly real" show by no means represents what can be done with this medium—and, unfortunately, it didn't. This, IP holds, is an art form in its infancy which suffered grievously through the misapplication of the tools available.

IP advocates: (1) immediate agreement upon standards; (2) vastly improved viewing spectacles; (3) the judicious use of a proper sound level, and (4) removal from the technological scene of the race-track and ticker-tape devotees who are now intrenched in the Hollywood and New York executive offices.

JAMES J. FINN

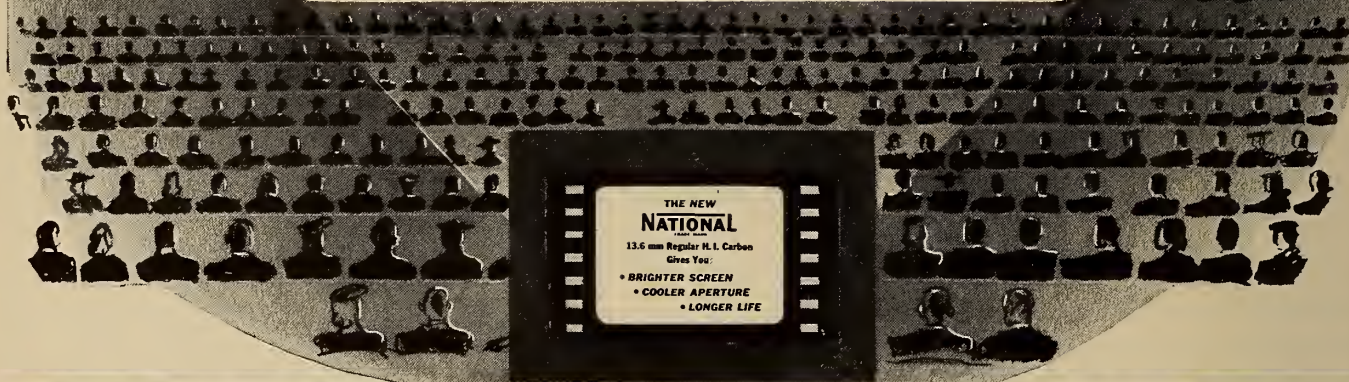
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CinemaScope: What It Is, How It Works

A LENS which restores to its proper proportions an image previously distorted makes possible the compression onto 35-mm film of wide-angle panoramic scenes and is the basis of the new CinemaScope system of wide-screen motion pictures sponsored by 20th Century-Fox.

When the film is projected through a companion lens, the distorted image assumes its former normal dimension, just as a trick mirror in a carnival fun house would straighten out its distorted reflections if placed before a mirror having compensating distortions.

CinemaScope Not 3-D

CinemaScope is *not* stereoscopic movies—not the same as 3-D. CinemaScope films do not require the use of viewing spectacles, do not require special dual motion picture cameras and dual projectors. But the result on the screen, which does present an *illusion* of three-dimension pictures, is said by some to be superior to 3-D films.

Like the Cinerama process, CinemaScope pictures are panoramic and have stereophonic sound. The wide screen used for CinemaScope is a solid screen having a great reflectance, and is curved slightly but not to the extent of the Cinerama screen.

CinemaScope is a simple, inexpensive process applicable to either color or black-and-white films, which simulates three-dimension to the extent that

IP presents herewith, as a matter of record, the observations of our good friend and colleague, Arthur Gavin, editor of *American Cinematographer*, on the 20th Century-Fox CinemaScope.

objects and actors seem to be part of the audience, while its stereophonic sound imparts additional life-like quality as it moves with the actors across the screen.

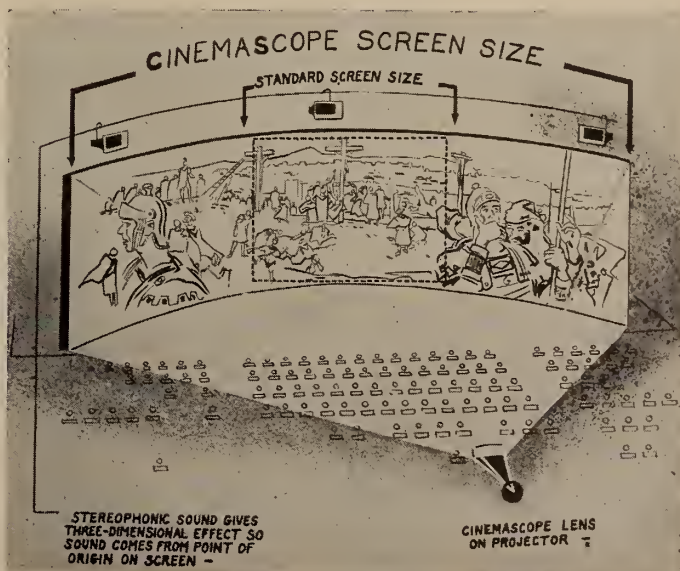
CinemaScope is a simplified improvement of an anamorphoscope lens (which he called a Hypergonar) developed by Frenchman Henri Chretien.

(ED. Note: Webster's dictionary defines anamorphoscope as: "A cylindrical mirror or lens which restores to its normal proportions an image distorted by anamorphosis.")

Lens Attachment Used

The anamorphoscope is fitted before the regular camera lens and functions to gather up a wide field of view and funnel it, compressed, through the camera lens, leaving a distorted image of the scene on the film. In projection, a similar anamorphoscope placed before the projector lens unscrambles the image so that it reaches the screen exactly

PROJECTION OF CINEMASCOPE movies requires but one projector. Screen is curved slightly and fills entire stage proscenium. Three speakers—one in center and one at either side of screen (i.e., behind it)—reproduce the stereophonic sound track, to lend added naturalness and dimension to CinemaScope movies.



as filmed and completely without distortion.

In describing the Hypergonar anamorphoscope lens, Chretien said: "The Hypergonars which we have built are of two types: for photography, and for projection. They differ only in their dimensions and their mountings."

From the optical point of view, they consist of two separately achromatized systems: a converging system consisting of two lenses, cemented together, and a diverging system consisting of three lenses, cemented together.

In photography, focusing of the anamorphoscope is accomplished in accordance with the distance of the subject, by means of a spiral-shaped shaft

and the help of a distance calibration. This does not alter in the least bit focusing of the camera lens.

Projection Adjustment

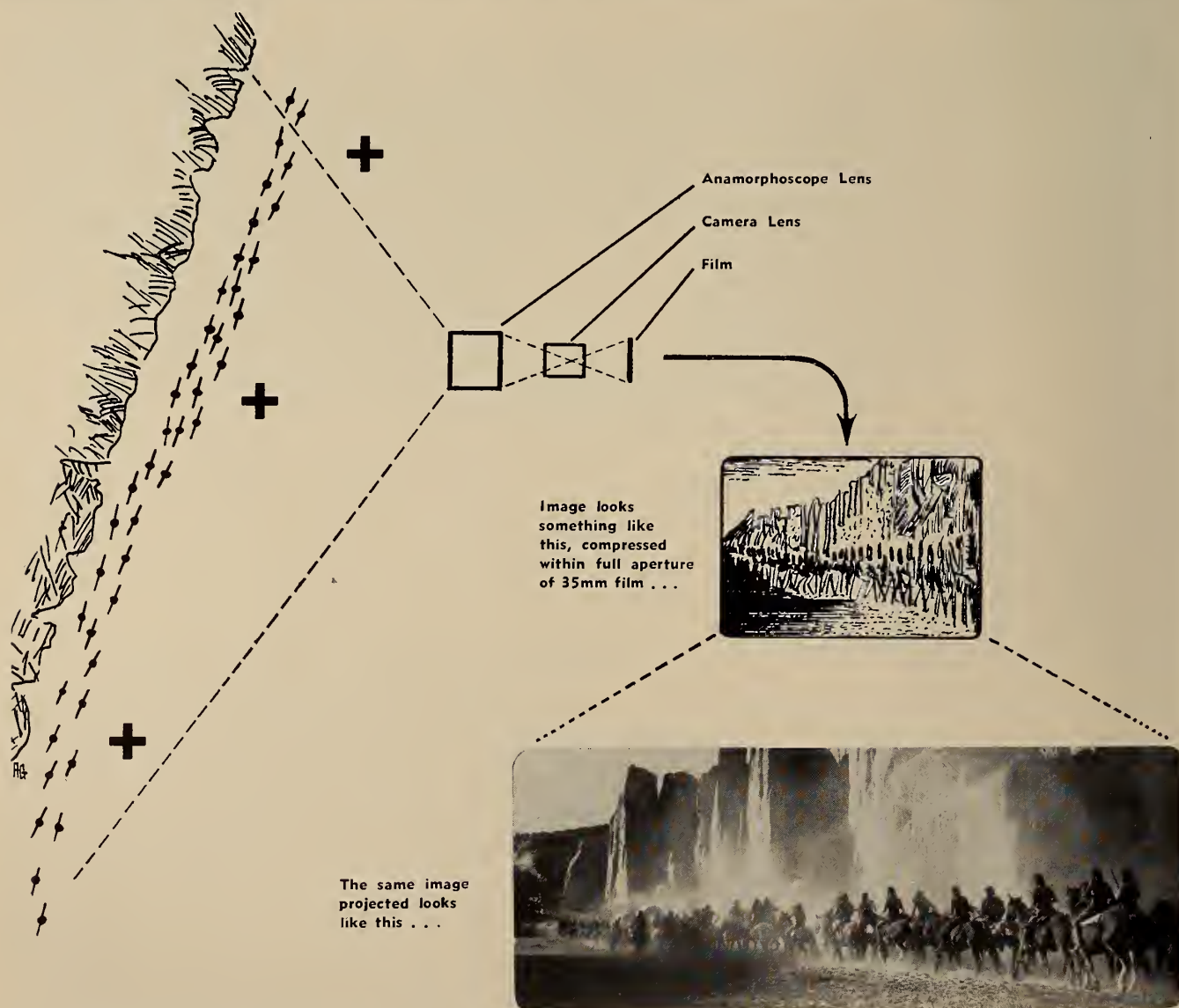
In projection, Chretien explains, the Hypergonar is adjusted once and for all in accordance with the distance of the screen, by means of a helical rack and pinion. The interposition of the Hypergonar does not modify the definition on the screen, he claims.

The loss of light occasioned by the introduction of the anamorphic attachments is insignificant, the inventor points out, because the consecutive interposition of only two supplementary lenses, *i. e.*, the two Hypergonar units, consists of cemented lenses. In addition,

the exterior surfaces of the elements in each system are treated with anti-reflection coating. In projection, the screen brightness is reduced proportionately to the enlargement of the anamorphic attachment, since there is a larger screen area to light, and not in proportion to its square (as would be the case where the image were enlarged in all directions).

One Projector Used

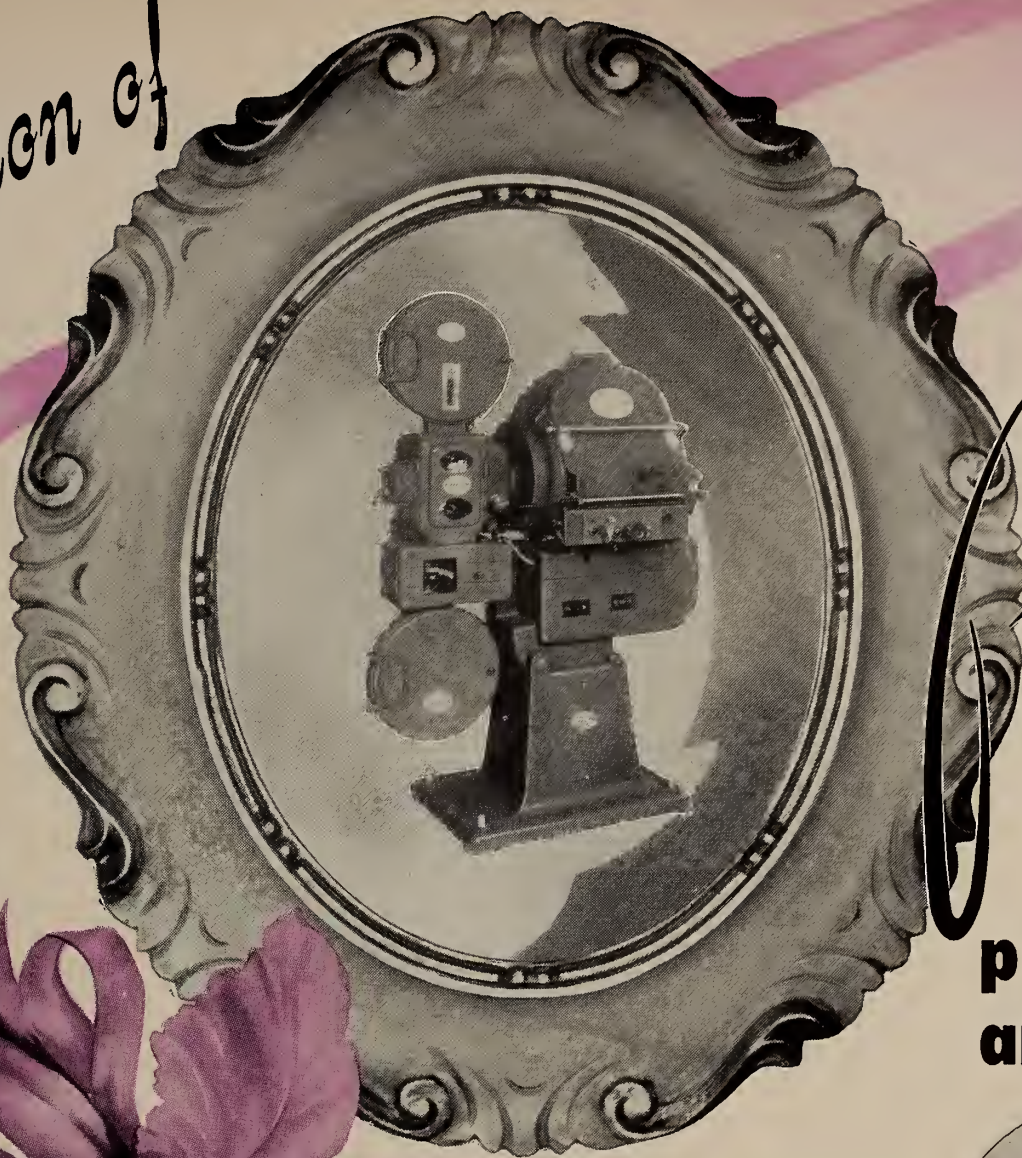
CinemaScope requires only one camera for filming and one machine for projection on the screen. It utilizes the same cameras and projectors now standing in all studios. And because the anamorphoscope lenses can be adapted to all makes of 35-mm cameras, 20th Century-Fox expects to make



HOW CINEMASCOPE WORKS—Panoramic scene of marching Indians at left is photographed with an anamorphoscope wide-view lens in front of camera lens. This compresses image within the full aperture of 35-mm film. In projection, another anamorphoscope placed before projector lens expands compressed image

to full scale so it appears on screen as shown above, lower right. Three microphones (X) placed strategically to cover the full range of the set or scene, record three separate tracks to provide stereophonic sound, a vitally important factor in the CinemaScope system. This is the 20th Century-Fox conception of the system.

The
Reflection of



Perfection
in
projection
and sound



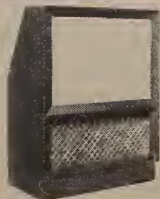
*For those who appreciate a better picture and better
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SOUND SYSTEMS

MOTIOGRAPH



HOW CLOSEUPS WILL BE COMPOSED in CinemaScope wide-screen photography. Tight closeups will probably be avoided in favor of head-and-shoulders composition, with the figure or figures placed a little to the left or right of center of the frame, as in this sketch of a scene for "The Robe," 20th Century-Fox's first CinemaScope production.

the CinemaScope system available to all motion picture studios.

Because the stereophonic sound tracks of CinemaScope films will be separated from the picture film, the picture will occupy the full width of the 35-mm aperture. In most cases, the 3-dimension sound will be recorded on magnetic film, in three separate tracks, as picked up by three microphones placed strategically in or above the set.

Although closeups are reproduced dramatically in CinemaScope films, fewer may be needed because medium shots of actors in groups of three and four show faces so clearly that the most minute emotions and gestures are obvious.

For Outdoor Spectacles

In the beginning, it is likely that most CinemaScope productions will be basically outdoor spectacle dramas. This will go a long way toward solving the lighting problem—which undeniably will be great when it comes to shooting the large wide-angle sets indoors on the sound stage. Also, it is likely there will be less emphasis on effect lighting, admittedly not so important where films are shot in color.

Film-cutting problems in the new medium will not be as great as was at first expected; because there won't be as many cuts in CinemaScope films as with standard productions. These films will be like stage plays where the spectator visualizes closeups and medium shots when he *focuses* his individual attention on the principal player or some specific bit of action.

Where closeups are necessary, cameramen say, it is likely that these will be photographed with the player just a little to the right or to the left of the frame center—not too far to one

side nor with part of the frame blacked out, as has been practiced in some other wide-frame systems.

Soundtrack Problems

The cutting of the stereophonic sound tracks, perhaps, will pose one of the greatest problems for cutters, for unless the scene is properly composed both for sound and picture, cuts may occur at the very highpoint of, say, dialogue coming from the extreme right of the screen, with sound for the succeeding cut jumping back to the extreme left of the screen.

Of great importance to the viewer, there is no distortion of images in CinemaScope pictures from any seat in the theatre, it is asserted. [*IP dissents.*] Screens, specially developed for the new system for extra brilliance, may be any length desired to fit any theatre. The screen used for projecting tests at 20th Century-Fox studios is 64 feet

wide and 25 feet high. A theatre like New York's Roxy would probably use one 80 feet long with proportionate ratio of height to width.

[*IP holds that a 2-to-1 ratio is the best.*]

Wide, Curved Screen

The screen curves to a depth of five feet—enough to afford a feeling of engulfment without reflecting annoying highlight from one curved end of the screen to the other, as deeper curving screens are said to do.

Due to the immensity of the screen, few entire scenes can be taken in at a glance, enabling the spectator to view them as in life or as one would watch a play when actors are working from opposite ends of the stage.

It appears that CinemaScope will make special effects photography more important to film production than ever before. Matte shots will be widely used, and there is the possibility that such shots will be the answer to the building of vast panoramic sets where the action must be staged indoors on the sound stage.

CinemaScope is ideally suited to spectacle films in which most of the action can be played against huge outdoor panoramic vistas. (*Original opinion voiced by IP.*) 20th Century-Fox has chosen "The Robe" as its initial production to be made in CinemaScope. Fox, which holds world rights to the system, except for France and its colonies, expects to have between 3,000 and 5,000 sets of CinemaScope lenses available before the end of this year. [*IP thinks NOT.*]

Film 1952 Profits Off 25%; Exhibitor Leader Optimistic

Reports on corporate earnings in the motion picture industry dramatically point up the great need to find new inducements for drawing customers into theatres and for relief from the present 20% Federal admissions tax.

A final report card on corporate earnings by 10 motion picture and film theatre companies, published this month by the *Wall Street Journal*, shows that earnings by these firms declined last year by 25.2%, dropping from \$39,473,000 in 1951 to \$29,530,000 in 1952.

Only three other industries were harder hit than the film field. Worse off were textiles, with a decline of 53.8%, followed by distillers with a minus change of 31%. Liquor firms are also appealing to Congress for tax relief.

Despite reports of declining revenue from exhibitors throughout the country,

the film attendance situation in New York City is definitely improving, according to a statement by William Brandt, of Brandt Theatres. He estimated New York box-office receipts as now running better than 25% over two years ago, and predicted that 3-D will bring even larger gains.

Sees Tv 'Saturation'

"This part of the Tv market is saturated," Mr. Brandt asserted. He also pointed out that the closing of some theatres over the past few years because Tv competition and other reasons has left the remaining houses in a stronger position.

"As a matter of fact," he explained, "except for the 'fringe' houses that folded, the whole field of film exhibition has been doing all right. Theatres have been making money for so many years that their mortgages are pretty well eaten away." Mr. Brandt feels that most New York houses are in an excellent position to ride through a depression.

Types of Theatre Sound Reproducers

This is the fourth of a series of articles analyzing the essential nature of devices that convert sound records into electrical currents.

By ROBERT A. MITCHELL

IV. The Sound-head

IT IS BAD practice to match the outputs of the two sound-heads by deliberately throwing one of the exciters out of focus in order to lower photocell response. The reproducers should be balanced by adjusting the voltage supplied to the exciters. In fact, the two projectors should be tested for equal sound output at the very earliest opportunity after replacing an exciting lamp. The easiest way to do this is to run 3,000-cps test loops in both projectors at the same time, switching back and forth with the changeover-fader to determine whether one machine gives louder sound than the other. Before making the test, adjust both exciter rheostats to supply full voltage to the exciting lamps, afterwards decreasing the voltage supplied to the exciter of the louder machine until the output seems balanced. By careful listening it is possible to adjust the outputs to within $\frac{1}{2}$ decibel of each other. A difference of 1 db is just perceptible to the ear.

Adjusting Exciter Voltage

Some makes of sound equipment, unfortunately, employ other means of equalizing the sound outputs of the two machines. In this writer's experience adjustable exciter voltage has proved to be the most satisfactory method, and certainly the simplest. Varying the output-current of the photocells, unless accomplished by means of very accurate constant-impedance "networks" of the potentiometer type, is likely to change frequency-response characteristics, and that's a bad thing. But where separate preamplifiers are used—one preamplifier for each sound-head—the output of these to the main amplifier may be adjusted by ordinary potentiometers of the type used as volume-controls in radio sets.

An exciting-lamp circuit is no more complicated than that of an ordinary electric-light bulb. But this does not mean that the projectionist should ignore it. A surprisingly large number

of costly sound outages have been caused by defects in this simple circuit that could have been corrected in a jiffy had the projectionist taken the trouble to find out where his exciting-lamp current was coming from and where the fuses were located.

Low voltages are used for exciters because, in order to use a specified number of watts in the bulb, the current must be higher than in a high-voltage bulb burning the same number of watts. This means that the exciter filament must be made of heavier wire because the heavier the filament, the more immune it is to fluctuations in temperature (and brightness) with fluctuations in voltage. A 10-volt exciter drawing 5 amperes will give good sound even if operated on 60-cycle A.C. The A.C. hum is noticeable only when no film is in the projector. Now, an exciter of these specifications burns 50 watts, as the power in watts is merely electromotive force in volts multiplied by the intensity of the current in amperes.

$$P = E \times I$$
$$\text{Watts} = \text{Volts} \times \text{Amperes}$$

Suppose that, instead of this, we were to use a 50-watt 120-volt bulb as an exciter. It will be just as bright, but calculation shows that it draws a current of only 0.4197 ampere.

$$I = \frac{P}{E}$$

Exciter Lamp Filaments

Because it draws so little current, however, the filament of the 50-watt, 120-volt bulb is made of much finer wire than the filament of the 50-watt, 10-volt exciting lamp. Consequently, the filament is unable to retain heat for any length of time, and would give a very strong A.C. hum if used in place of a regular exciting lamp. The 10-volt, 5-ampere exciter, even though burning the same number of watts and having the same brightness, has a filament of thick wire which is said to possess considerable "thermal lag." It takes a moment for it to brighten when the current is switched on, and it

continues burning for a moment after the current has been turned off. A.C. of 60-cycles goes from "full on" to "completely off" 120 times each second; but the filament of the low-voltage exciter dims only the slightest bit during the "off" periods, while that of a 120-volt house bulb loses some of its heat and light during the periods when no current is being supplied.

Many of the lower-priced sound systems actually do use 60-cycle A.C., stepped down to the proper voltage by a transformer, for powering the exciters. Projectionists operating on such systems guard against hum reaching the ears of the audience during intermissions by avoiding, whenever possible, switching the fader to an unthreaded projector.

More expensive sound systems have either D.C.-operated exciters or vacuum-tube oscillators which supply A.C. of a frequency too high to be heard, and certainly too high to cause any fluctuations in the brightness of the exciter filaments. It will pay the projectionist to study his exciter current-supply apparatus in order to find out how it works and what is likely to burn out and require periodic replacement. In the case of most D.C. exciter current sources there is nothing more complicated to deal with than a set of Tungsar rectifier tubes. Others make use of dry-disk rectifier packs.

While checking his apparatus, the projectionist should also ascertain whether or not his amplifier-tube filaments and his speaker field-coils are being energized by the same units. If he knows that the exciters have the D.C. current-supplying apparatus all to themselves, he need never get caught in a jam if something goes wrong with it. A toy electric-train transformer will serve to keep the exciters burning in an emergency. A couple of storage batteries may also be used (employing a rheostat to cut the voltage down from 12 volts); but dry cells will not last long enough.

The "flicker test" for focusing a soundhead optical tube was given previously. In addition to the in-and-out

adjustment of the optical tube, there is an azimuthal, or rotational, adjustment that warrants a few words—of warning! Azimuth need never be altered once it has been set correctly. This is usually done at the factory; and if your sound service engineer finds it necessary to disassemble the elements of the optical tube, he will restore correct azimuth. Don't tamper with it.

A different type of optical system involves the *projection* of an enlarged image of the soundtrack upon a slit placed close to the photocell. The advantage of this system lies in the ease with which the projectionist can adjust the focus.

Still another system, widely used in portable equipment because of its compactness, is the cylindrical-lens system, in which a reduced and "straightened" image of the lamp filament is focussed directly on the soundtrack, no mechanical slit being used.

But whatever the constructional details of the optical unit, it will function properly only if its lenses are kept free from dirt and oil at all times. Soiled lenses produce the same effects as an out-of-focus optical tube.

Distortion similar to that caused by out-of-focus optics may occur if the ionizing voltage supplied to the photocell is too low. This seldom happens unless line-voltage falls much below normal, though short-circuited condensers and worn-out amplifier tubes may cause it.

Photocells are Durable

Photocells do not "burn out," and they last for a very long time unless damaged by excessive polarizing voltage or by exposure to direct sunlight or other bright light. *Rapid* deterioration of sound quality, therefore, is most likely the effect of a bad tube in the amplifier, not that of a "worn-out" photocell. Photocells are good just so long as they give normal sound volume; and their output is easily tested by actually trying them out in a soundhead known to be in good working order.

A photocell having loose elements or a loosened glass envelope is unfit for use, even if new. When we stop to consider that the tiny impulses generated in the photocell are amplified about 10 billion times to make them strong enough to operate the speakers, we can readily appreciate that mechanical vibration of a defective photo-

cell easily cause "machine noises" or a "gargle" in the sound. Dirt in the photocell socket may cause grating or rasping noises.

It stands to reason that faulty amplifier-tube contacts and "burned" or dirty switches can cause exactly the same kind of intermittent noises which sometimes arise in the soundhead. If the theatre has a disk reproducer, the sound can be switched over from "film" to "disk" in order to determine whether the noise has its origin in the projector soundheads or in some other part of the system.

Soundhead Film Guides

Every soundhead, new or old, has a film edge-guiding device to keep the soundtrack centered laterally in relation to the scanning beam. For if the film gets pushed in too far in the direction of the drive side of the mechanism, the film perforations will be scanned, resulting in a noise resembling that of a motorboat. Or if the film is displaced too far in the other direction, the frame lines will be scanned, making a noise like that of a pneumatic drill. Adjustment of the guide roller is best made while a special test film having a blank soundtrack, but "chopper" and "buzz" tracks on either side of the scanned area, is run. The guide roller is moved either in or out until no sound is heard, showing that neither the chopper nor the buzz track is being scanned.

The term "travel distortion" includes a number of troubles to which the expressive names, "wows," "flutter," "gargle," and "whiskers" have been given, all of which are defects caused by non-uniform rates of film-travel past the scanning beam.

When the pitch of the reproduced sound rises and falls at a slow rate, but rapidly enough to spoil the quality of the sound, the term "wows" applies. Variations in speed may be periodic or irregular; and when periodic, they occur at any rate up to about 3 cycles per second, the same rate of wavering as that intentionally produced by the tremolo and vibrato controls of an organ.

'Wows' From Powerhouse

Incredible as it may seem, "wows" may originate in a powerhouse many miles from the theatre. In poorly regulated power plants it is often necessary for the control engineer to speed up or slow down the alternators at inter-



Walter Green, president of National Theatre Supply Co., signs contract with Arch Oboler, producer of "Bwana Devil," for exclusive distribution of "Magic-Vuers," disposable 3-D viewing spectacles.

vals in order to keep electric clocks running true. Also, two or more alternators connected in parallel may accidentally slip out of phase with one another. And when any of these things happen, an A.C.-operated phonograph or sound motion-picture machine will behave queerly. More than one projectionist has, on occasion, been alarmed to see his projector accelerate and decelerate without visible cause. The trouble is beyond his control, of course, and never so spectacular as the spontaneous bursts of temperament sometimes displayed by the old-fashioned vacuum-tube motor-control boxes of ERPI make.

If the current supplied to a "wow-ing" projector is hitting on all 60 cycles, the motor may be suffering from an intermittent short-circuit in one of its windings, or the centrifugal switch may be defective. When the motor is known to be in good condition, the projector mechanism may be binding. Beyond these possible sources of trouble, the commonest cause of wows, in the case of rotary-stabilizer soundheads, lies in the adjustment and condition of the pressure guide-roller assembly. As a rule, wows from this cause make their appearance when a projector is started up, and may ruin sound quality for half a minute or so after a changeover is made.

The reason for this defect is failure of the film to bring the scanning drum up to normal speed. Increasing the tension of the pressure-roller spring often corrects this fault. But it is always a good idea to make sure that the drum itself revolves freely, for if it binds, due to dirt in the ball-bearings or to inadequate lubrication, a bad case of wows will surely result. The film be-

(Continued on page 33)

MAGIC CARPET...
from here
...to there!



By the reel, it's just so much film. On the screen, it's freedom... a magic carpet—from here—to there.

Actually, there's nothing in the world quite like a good show... nothing so relaxing... nothing so rewarding.

That's why it's so important that all details be precisely attended to. That's why the industry is so keenly interested in latest technics; why the Eastman Technical Service for Motion Picture Film, in turn, is so earnest in its co-operation, with every phase of the industry.

Branches at strategic centers. Inquiries invited.
Address: Motion Picture Film Department,

EASTMAN KODAK COMPANY, Rochester 4, N. Y.

East Coast Division,
342 Madison Avenue,
New York 17, N. Y.

Midwest Division,
137 North Wabash Avenue,
Chicago 2, Illinois.

West Coast Division,
6706 Santa Monica Blvd.,
Hollywood 38, California.

LETTERS TO THE EDITOR

To the Editor of IP:

Regarding film cement, I am at present getting good splices with Fisher's Ethylloid and sanding one side of the splice. Cement does not show any tendency to attack the rubber bulb of the medicine dropper after more than two years of use.

Have been successful here in increasing screen light and reducing carbon consumption by two changes, which I would like to pass along. These changes cannot be carried out in all cases but are worth trying where possible.

The Wenzel projectors as first received here had the conventional rear 90° shutter blade installed. Using a piece of fibre as a test blade, I found it was possible to cut 1¼" off each corner of the outer edge of the shutter to a point towards the hub corner of the blades. Titles and pictures are sharp as with the full 90° blade, with no visible trace of travel-ghost or trembling, despite what Robert Mitchell says (IP for September 1952). In my opinion, a very small amount of "ghosting" is permissible without being noticeable to the audience.

The arc lamps in use here are the usual high-intensity with Strong 14-inch reflectors, two separate carbon feed motors, each with its own rheostat. The lamps are intended for use with the usual 6-mm negative and 7-mm positive carbons. Jaws of the negative carbon holder can hold a 7-mm carbon as easily as a 6-mm, and it was found that a 7-mm carbon in the negative side in place of the 6-mm not only gave a slightly brighter screen, but the two 7-mm carbons gave a steadier light with less critical carbon position setting. Also, carbon consumption dropped considerably. Carbon consumption for a 2000-ft. reel is ½" of negative and 1½" of positive. These figures can be vouched for by brother projectionists. Lamp voltage is 27 at 40 amperes. Carbons used are National Suprex.

K. C. BRIDGES
P. O. Box 25, Exeter, Ont., Canada

To the Editor of IP:

After reading your Monthly Chat in the March IP, I have come to appreciate more the plain speaking for which IP is noted. The trade papers in publishing every item of so-called "news" about 3-D and the various large screen processes, without analysis of the true worth of that "news," have served only to increase the confusion in the minds of exhibitors as

to how to equip their theatres and for what.

Your placement of 3-D picture showings far in front of present and proposed wide-screen picture showings is entirely correct. It is possible for nearly all theatres to equip for 3-D for a comparatively small additional investment, while physical limitations of many, many theatres definitely prevent installation of extra-wide screens.

Furthermore, the equipment branch of the motion picture industry is in a position to supply theatres with equipment necessary to show 3-D pictures over a reasonable period of time, while it is not fully prepared to handle the manufacture of equipment for systems still in the formative stage.

Stereophonic Sound a "Must"

3-D picture showings will be materially enhanced by the addition of stereophonic sound. If Hollywood would only select the Western Electric method of printing 3 sound tracks on the film where the present single track is now printed, the equipment manufacturers could quickly make stereophonic sound equipment that would be within the reach of nearly every exhibitor.

When a picture like "Bwana Devil" attracts as many patrons as it has, it proves that showings of better 3-D pictures will continue as good box-office draw.

I note, however, a tendency on the part of many theatre owners to confine their equipment purchases for 3-D picture showings to interlock equipment, large magazines, an additional power source, and, reluctantly, a new screen. It is my opinion that if theatre owners don't use arclamps giving the maximum obtainable screen illumination, 3-D will cease to be big box-office.

You have stressed for years the necessity for adequate screen illumination. I hope you will continue to do so and thus help the entire industry to regain and hold its lost patrons.

FRED C. MATTHEWS
MOTIOGRAPH, Inc., Chicago

To the Editor of IP:

Anent the March "Monthly Chat," I had to get the following comments off my chest. I agree that Hollywood has always neglected the very considerable technical ability available, both in and out of Hollywood. Only when trouble arose did they realize that their existence was a re-

sult of this brainpower. Now we see the spectacle of the studios running about frantically and causing confusion. Instead of a planned investigation under the auspices of the Academy, we have a repetition of the days when sound was introduced.

Stereo is old-hat to many amateurs in photography. This group is highly critical and capable of seeing the errors in 3-D. On the whole, they have been rather generous to "Bwana Devil," on the ground that it was a "first" and a quickie at that. Subsequent productions had better show considerable improvement lest 3-D get soundly panned—and ignored.

We assume that 3-D is in its infancy and that there is no limit to its growth—an assumption IP has also made for Tv. However, color Tv is not just being held back by the Tv industry; it is not yet in a commercially practical state. As for 3-D on Tv, maybe it isn't impossible, but don't throw a scare into an already frightened industry. Tv has enough headaches just putting on black and white shows.

In conclusion, the impact of 3-D is impressive when properly handled. I feel that the future of the film theatre lies more in this process than in wide or giant screen systems that could end the full-screen intimacy that is now an important part of modern films. Let Hollywood really investigate what has been done, what might be done, and then come up with a foolproof process.

ALFRED E. REVZIN
New York, N. Y.

Theatre Video Experiment

A closed-circuit theatre television program, designed to attract young people to careers in science or engineering, was presented last month to 2,500 junior and senior high school students from the New York metropolitan area. The Paramount Theatre on Broadway, the Fox in Brooklyn and the RKO Fordham Theatre in the Bronx were used in the experimental project.

Arranged by the Technical Studies Council of New York, Inc., with the cooperation of the Public Service Committee of the theatre-television industry and other groups, the closed circuit program presented practical demonstrations of work in the fields of electronics, aviation, nuclear physics, petroleum chemistry, construction and other industries.

Dr. William Jansen, New York superintendent of schools, said as he appeared at the program's conclusion that he felt he was making "education history." A two-way audio hookup in the theatres allowed the students to question a three-man panel of scientists.

World-Premiere of Altec-Paramount 4-Projector, No Intermission, 3-D Color Showing

IP is proud that its reputation for plain speaking and the presentation of factual data relative to the various "new" processes now being employed in the motion picture industry has merited its selection as an exclusive medium for the publication of an historic technological first.

THE persistent, long unrecognized and unrewarded efforts of motion picture technicians came to fruition on the night of April 10 last when there was presented at the New York Paramount Theatre for the first time anywhere a third-dimensional, full-stereophonic sound, *non-interrupted* motion picture—"House of Wax." It would be idle to speak of opening up a "new era in cinematography for the simple reason that the achievements of these technicians speak so eloquently for them.

Happily for the motion picture industry, the N. Y. Paramount job is to be followed by similar installations throughout the U. S. A. with the same expert blending of technological resources. This triple-header "first" for Warners, for the Altec companies and for the Paramount is a happy augury for brighter days ahead on an industry-wide front.

"Wax" was recorded full-stereophonic in the following manner:

The Recording Process

Three stereophonic channels which feed the three speaker systems located on the stage are recorded on 35-mm magnetic film, there being three magnetic tracks 200 mils wide with 150-mil separations being recorded thereon. The right-eye picture film carries a photographic soundtrack on which is recorded selected music and special sound effects which will be reproduced over the theatre main system feeding auditorium speakers which will be mounted throughout the auditorium.

The left-eye picture has recorded on it a full photographic track carrying monaural sound of the *entire* picture which can be used in the event the stereophonic presentation is not desired, or for emergency use if necessary.

The 35-mm magnetic film is reproduced on a three-track magnetic reproducer which, together with a three-

channel Altec amplifier system, are the main portions of the sound equipment added to the projection room. In addition, a second room monitor speaker is used to monitor the magnetic film reproduction. Three Altec speaker systems are installed in the theatre in back of the screen—one in the center, one on the left side and one on the right-hand side of the stage. There are 18 large cone-type speakers installed in suitable cabinets located in the rear and rear sides of the auditorium.

In addition to the normal projectors required for the presentation of the 3-D picture which have been equipped with interlocks, filters and 5000-foot magazines, the magnetic reproducer supplied also accommodates 5000-foot reels from which is reproduced the three magnetic tracks.

Visual-Sound Tie-In

The magnetic reproducer is tied-in with the projectors by means of an interlock so that *all three* units operate in synchronism. In order to avoid an intermission in the program, all the equipment being installed in the Paramount is dual equipment. This means that there are *four* picture projectors and *two* magnetic reproducers. These are interconnected as *two* systems. Each system consists of two projectors and one magnetic reproducer. Changeover between the two systems is effected by relays and changover

switches in order to effect instantaneous changeovers between the systems, thereby avoiding intermission in the program, which is again a "first" as far as the presentation of 3-D is concerned.

The magnetic reproducer rack consists essentially of:

1. Film-Feed Panel
2. Motor-Control Panel
3. Film-Drive Panel
4. Film-Makeup Panel
5. Jack Strips
6. Pre-Amplifiers

Film-Feed Panel

The film-feed panel corresponds to the upper magazine in a projector and carries the spindle on which is placed the full reel of magnetic film to be reproduced. This reel is driven by a separate torque motor especially designed to provide tension to the film and feed it properly to the reproducer mechanism. The same motor is also used when rewinding the film.

By applying sufficient voltage, the film may be rewound from the takeup reel after it has been unthreaded from the drive panel. When rewinding, enough holdback-voltage is applied to keep the film under control. A buckle switch protects the film, and all the necessary voltage changes are handled

"Wax" Credits to:

Warner Brothers Pictures for their belief in and support of, in terms of cash, their aspirations:

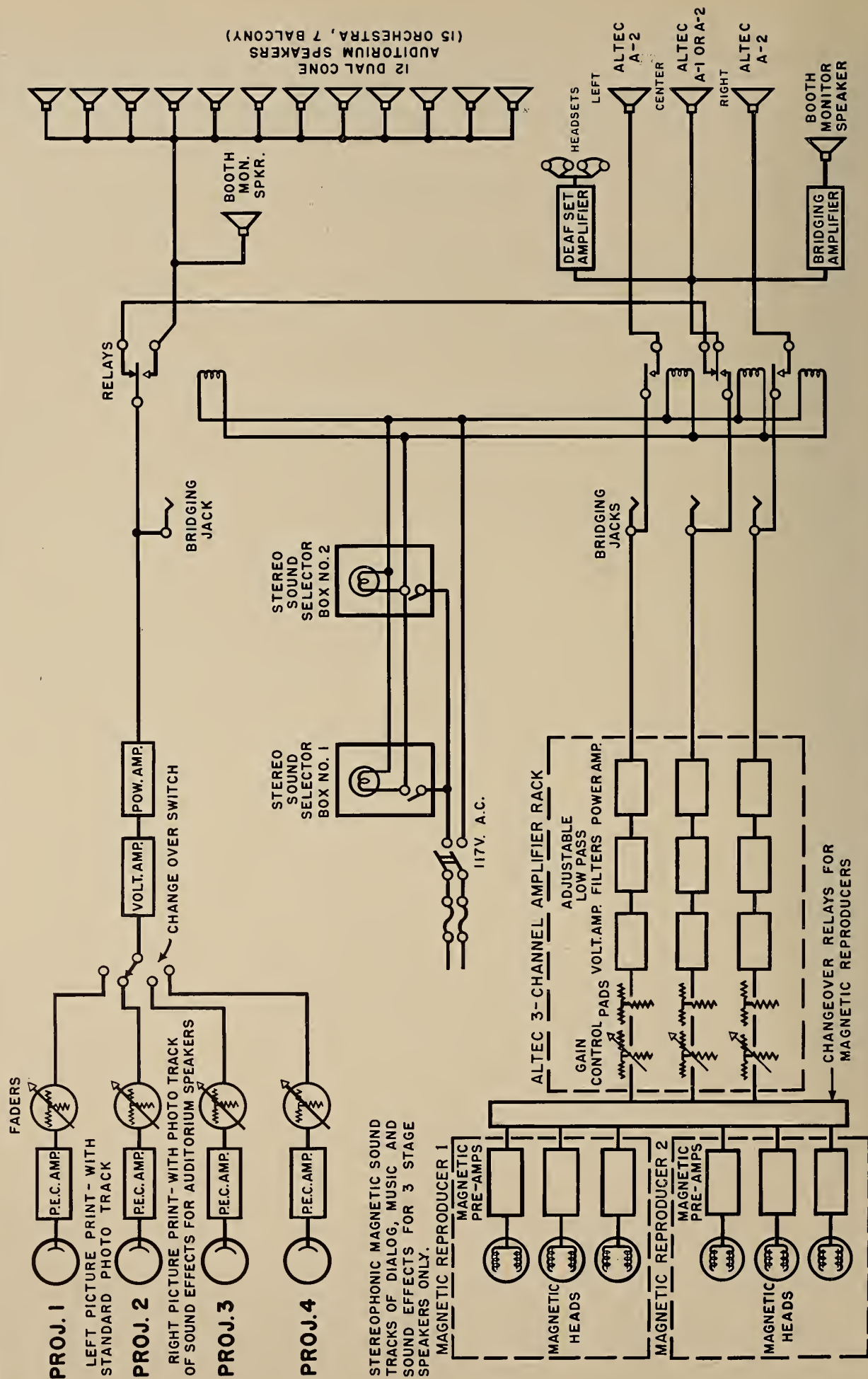
Bill Mueller, director of sound for Warners; his assistant, Lloyd Goldsmith; musical director Ray Heindorf and visual director Andre De Troth—and their staffs—who worked around the clock to effectuate, *via* a full re-recording job, the Warner decision to go all-out with full stereophonic sound for "Wax";

Altec Lansing and Altec Service Corp. who gave unstintingly of their facilities in a happy marriage of manufacturing and installation know-how for the over-all good of the industry, and

One of our own projectionist family, Harry Rubin, director of projection for United Paramount Theatres circuit under whose personal supervision the history-making N. Y. Paramount installation was made, who insisted on a 4-projector, non-interrupted showing setup.

To the Altec and Paramount crews, unnamed but not to be forgotten, who worked through tedious days and nights to erect this milestone of progress along the road of motion picture technology.

Over-All System Schematic for Altec Installation for 3-D 'House of Wax' Premiere Showing



automatically when the motor switch or rewind key on the control panel is thrown. The torque motor is equipped with a brake which stops the motor after each running.

Motor Control Panel

The motor-control panel has the rotary motor switch that connects the drive-motor to either the Selsyn interlock drive from the projector motor system or the three-phase, 220-volt supply for independent running. Between the two positions is an "Off" position that completely isolates the motor from the line. In either of the running positions, the appropriate single-phase, 220-volt power is applied to the torque motors, and the torque motor brakes are released.

The key switch is the rewind switch which allows the film to be rewound from the lower to the upper reel, or *vice versa*, when it has been removed from the drive sprocket and the sound-head.

The push-button is a brake release which when operated removes the brakes from the torque motors when the film is threaded through the buckle switches. This facilitates threading the drive sprocket and soundhead, and allows easy positioning of the sound start at the pickup head.

The buckle switch for the film-feed torque motor is also mounted on the motor control panel. This removes the power from the torque motor and applies the brakes whenever the film runs out.

Film-Drive Panel

The film-drive panel contains the drive motor which is actually two motors in one—a Selsyn interlock motor and a synchronous motor. The synchronous motor is used only for independent operation, for sound system testing, *etc.* The Selsyn motor is used for all regular stereophonic theatre sound reproduction.

The drive-motor operates the single-drive sprocket, and drives the film over the tension rollers, the flywheel drums and the magnetic sound reproducing heads. The drums and heads are enclosed in a shield box to reduce the possibility of hum pickup.

Film-Takeup Panel

The film-takeup panel is a duplicate of the film-feed panel, and its operation is similar. Since it is acting to take up the film during normal running, somewhat higher voltage is applied to the

torque motor to insure satisfactory operation regardless of reel diameter.

When rewinding, the torque motor operates like the one in the film-feed panel, but the voltages are applied in *opposite* order. For rewind-up, the applied voltage is high on the film-feed motor and low on the takeup motor. For rewind down, the voltages are reversed.

Jack Strips

There are two rows of jacks which provide facilities for checking the sound output from the pre-amplifiers.

In the upper row, Jack pairs 1, 2 and 3 are the actual output of the three sets of pre-amplifiers. In the lower row, Jack pairs 1, 2 and 3 are the lines which carry the sound to the amplifier rack. The Jack pairs 1, 2 and 3 in the upper row are normalled to the corresponding Jacks in the lower row.

The output of the pre-amplifiers also appear on Jack pairs 10, 11 and 12 in row One, and the circuits may be monitored on these Jacks without interrupting the normal circuits to the amplifier rack.

Pre-Amplifiers

At the very bottom of the rack is a tray containing three pairs of amplifiers which receive the output of the reproducer heads. These amplifiers are

made readily removable for servicing purposes. The first amplifier of each pair contains equalization for compensating for the normal characteristics of magnetic recording. A screwdriver-controlled switch allows further adjustment of the characteristics to compensate for head wear.

Gain Amplifier in Each

The second amplifier of each pair is a gain amplifier with a flat characteristic. A gain-adjusting pot with screwdriver-control is available on this amplifier. The output of each pair of amplifiers feeds through Jack rows, as already noted, and may be picked up on a terminal block at the base of the rack accessible from the rear.

In addition to the aforementioned equipment, the changeover mechanism for changeover between the two magnetic reproducers is also located on the rear of this rack and is relay-controlled from a changeover switch located on the front wall of the projection room.

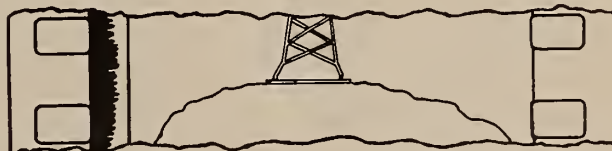
Altec 3-Channel Amplifier Rack

The Altec three-channel amplifier rack consists of three identical amplifier channels. Each channel is capable of delivering 75 watts of power with less than 2% total harmonic distortion. Each channel comprises the following:

- A. A volume control nominally set
- (To page 20, following 2-page schematic)

Sound tracks utilized by Altec installation of wiring and equipment for the premiere showing of Warner's 3-D "House of Wax" at the N. Y. Paramount Theatre.

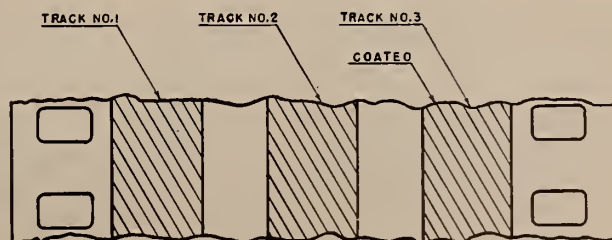
Left-picture print with complete standard photographic sound-track for normal and emergency stereophonic use.



Right - picture print with photographic sound track of selected music for sound effects for auditorium speakers only — this for stereophonic.

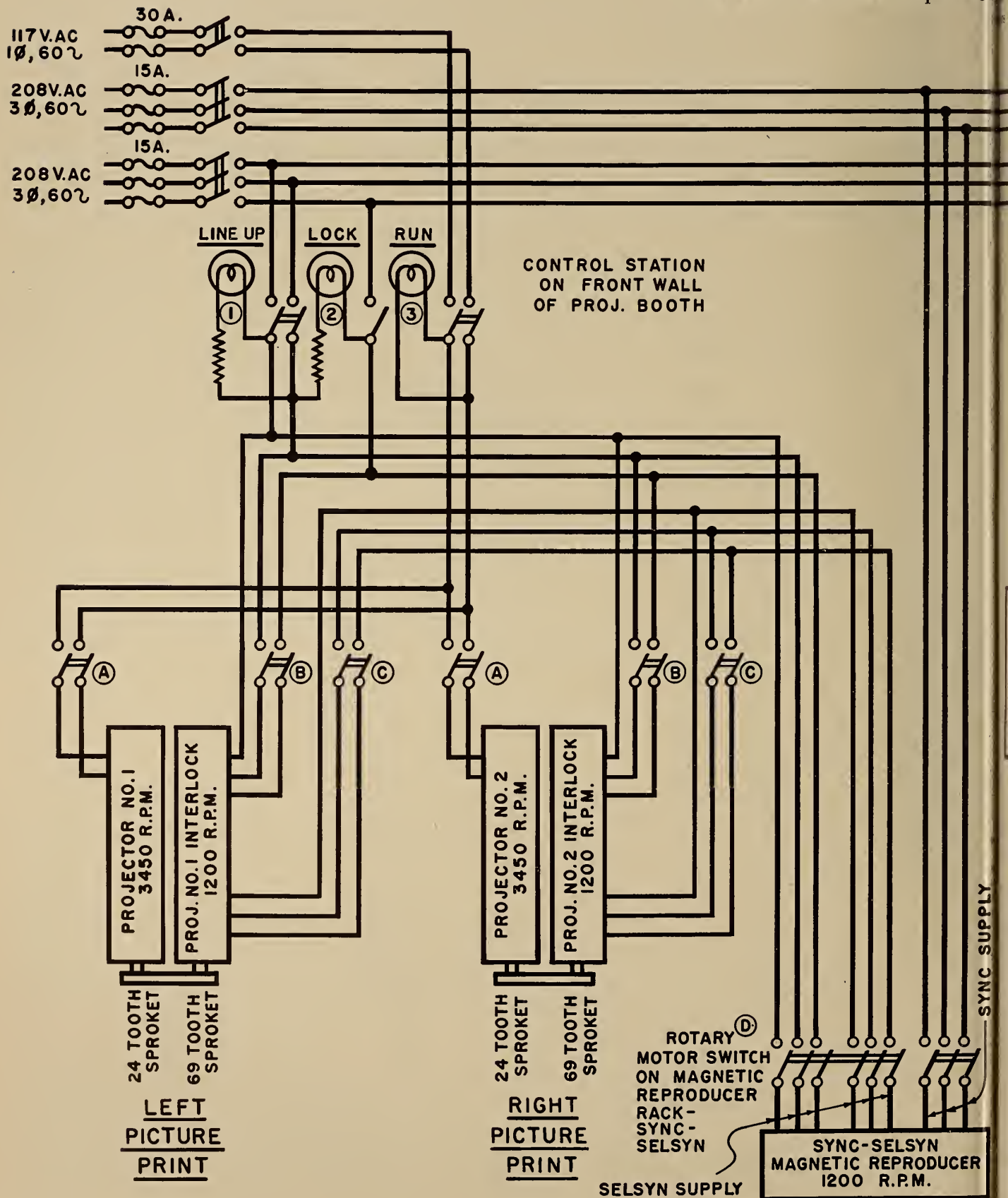


35 - mm magnetic film with triple-track magnetic recording to feed the left, the center and the right stage speakers.



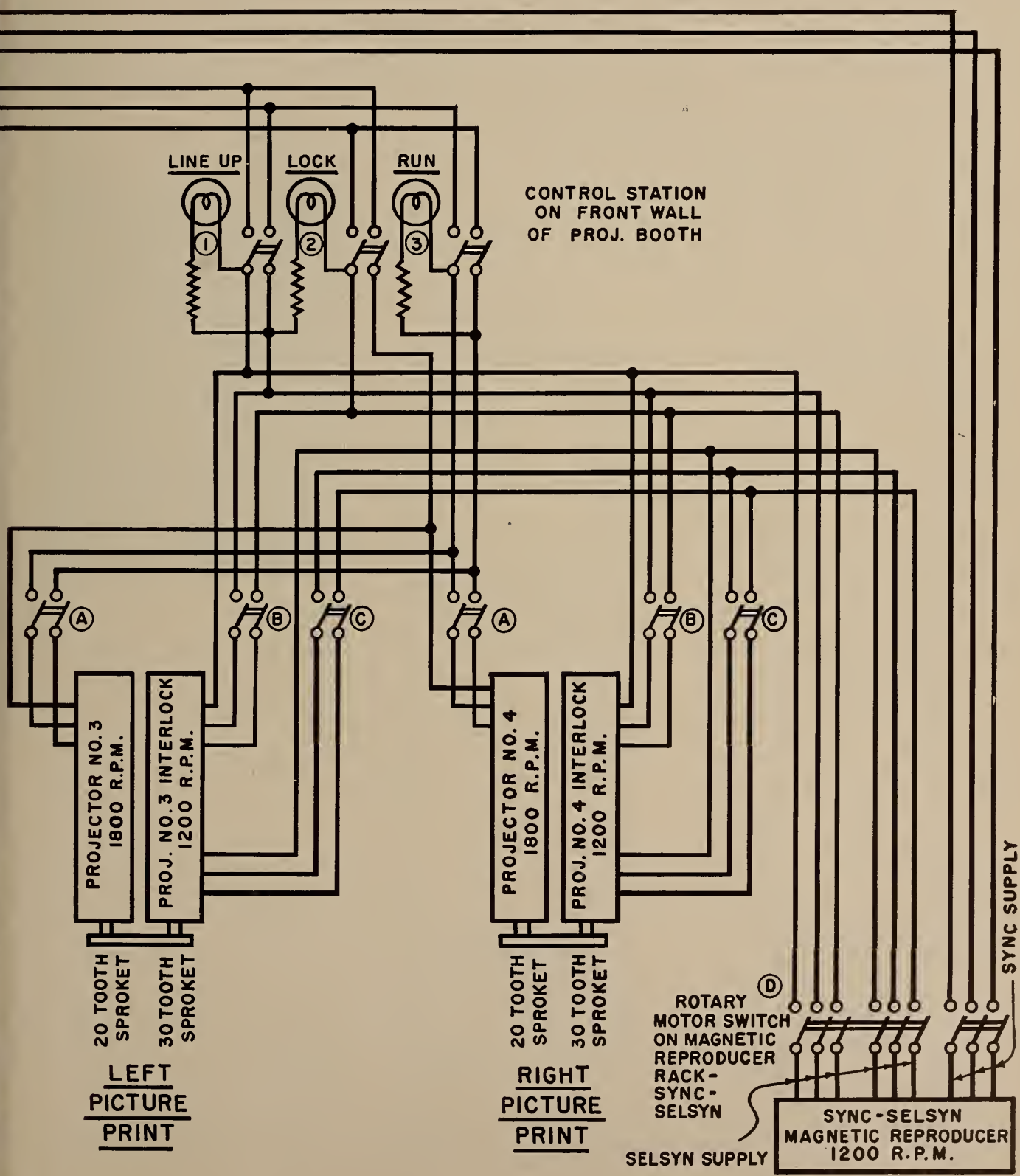
Interlock and Motor Schematic for N. Y. Paramount Install

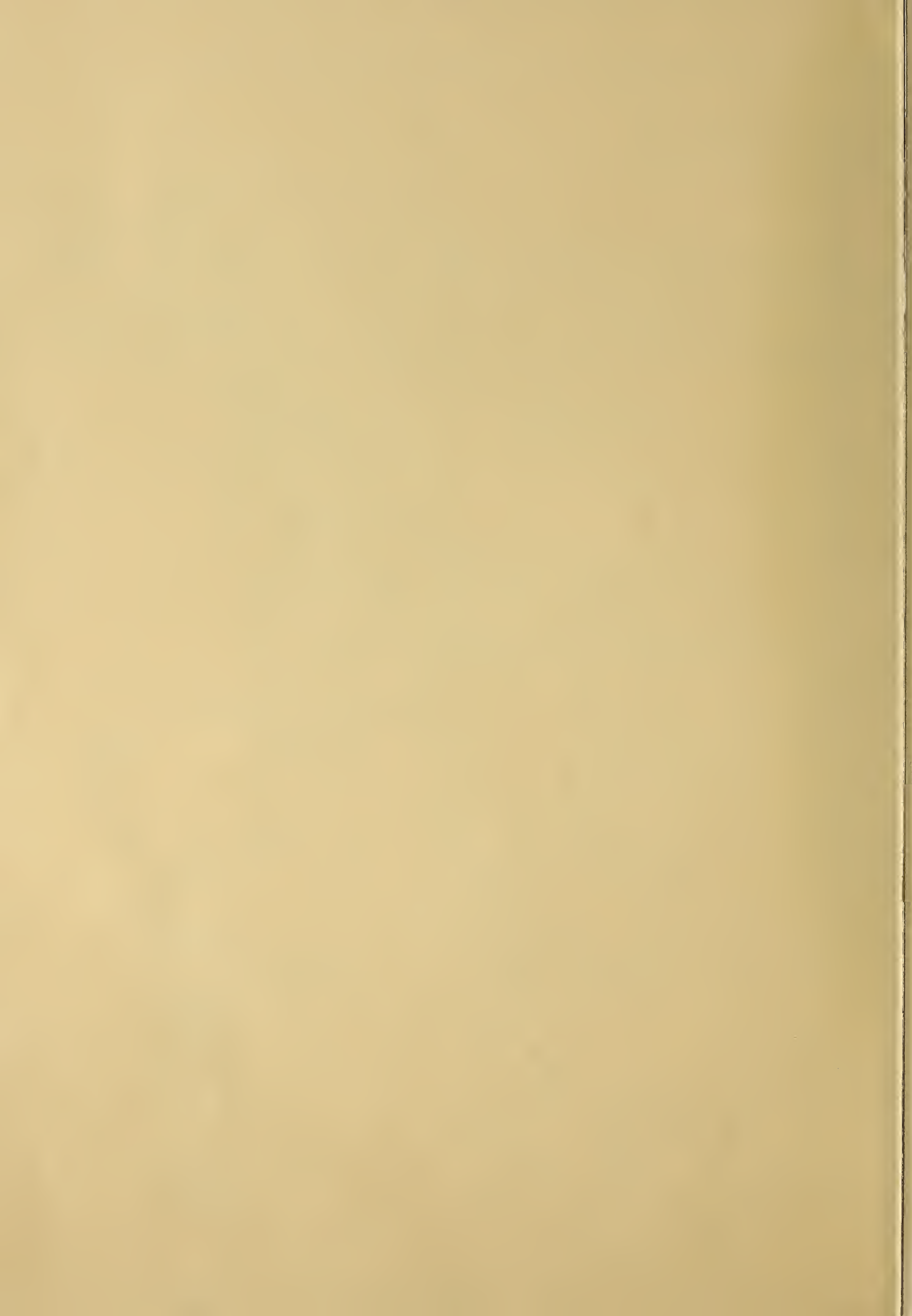
NOTE: The projectors as arranged, a
volt, single-phase motors, and that
motors. This dissimilarity of motors
motors and the interlock compensate



Projector, Non-Interrupted, 3-D Showing of 'House of Wax'.

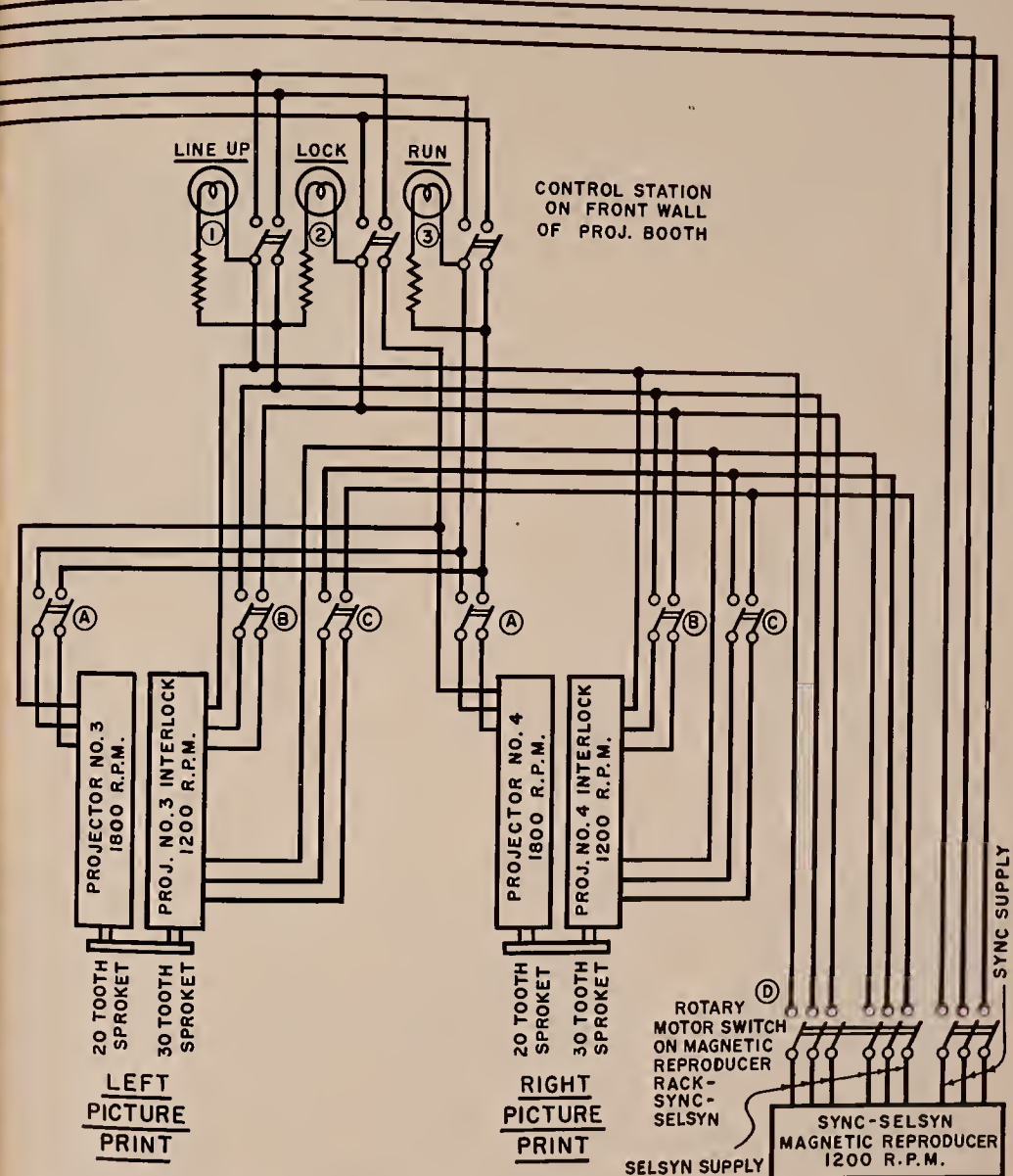
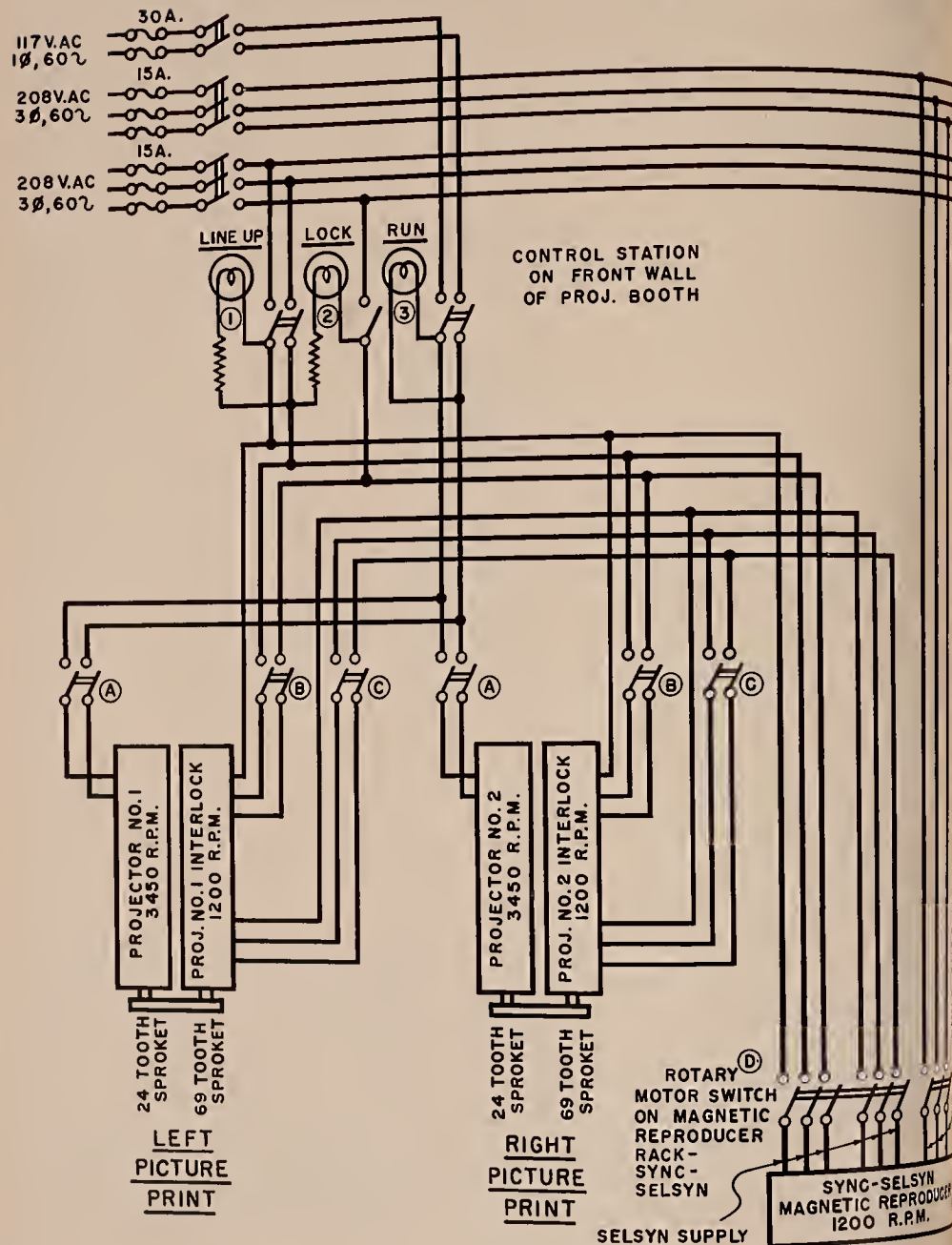
In this drawing, show that Nos 1 and 2 projectors are equipped with 3,450 r. p. m., 110-volt motors in Group 2 (right-hand side) are 1,800-r.p.m., 220-volt, three-phase synchronous motors, impose any operational difficulties, since the gear arrangement between the drive sprockets in the motor speed. Subsequent installations will make it necessary at times to inter-
 of *different speeds on the same installation.*





Interlock and Motor Schematic for N. Y. Paramount Installation 4-Projector, Non-Interrupted, 3-D Showing of 'House of Wax'.

NOTE: The projectors as arranged in this drawing, show that Nos 1 and 2 projectors are equipped with 3,450 r. p. m., 110-volt, single-phase motors, and that projectors in Group 2 (right-hand side) are 1,800-r.p.m., 220-volt, three-phase synchronous motors. This dissimilarity of motors, of course, impose any operational difficulties, since the gear arrangement between the drive motors and the interlock compensates for differences in the motor speed. Subsequent installations will make it necessary at times to interconnect motors of different speeds on the same installation.



4-PROJECTOR, NON-STOP, 3-D COLOR, STEREO SOUND

(Continued from page 17)

on 20 db, of 20 steps, 2 db each, and a fixed 30-db pad.

B. A voltage amplifier with a gain of 40 db. The frequency response of this amplifier is nominally flat from 20 to 20,000 c.p.s. High-frequency roll-off for theatre equalization is accomplished in this amplifier.

C. An adjustable low-pass filter. This filter provides for high-frequency cut-off characteristics and is used to accomplish the final theatre characteristics.

D. A power amplifier with a maximum gain of 50 db and an output of 75 watts. This amplifier also provides gain control in 9 steps of 2 db each. Normal operation of this amplifier is

with a gain control on maximum.

E. An audio relay panel is provided to switch amplifier power to the speakers. The switching of the outputs in the three channels for "stereo" to "normal" operation is effected by means of stereo-selector boxes mounted on the front wall.

F. A bridging Jack is provided across the output of each of the three channels at the input of each speaker relay. These Jack points provide easy access for test purposes and for headphone monitoring of each of the three stereo channels.

Speaker Systems

The main theatre speaker systems

for stereophonic reproduction are the large-size Altec Lansing A2 speaker systems for each of the three stereo channels. Each speaker system consists of a network of high-frequency horns equipped with two high-frequency speakers and two low-frequency horns accommodating four low-frequency speaker units.

Speaker Positioning

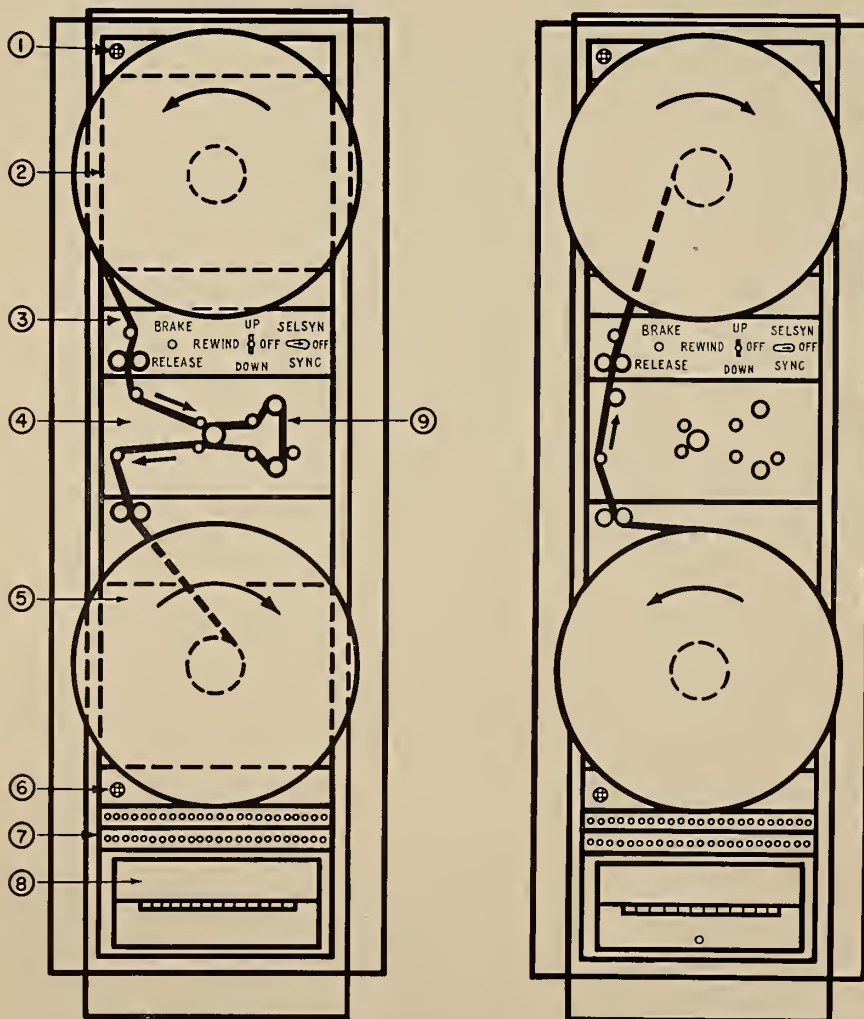
As mentioned previously, these speaker systems are located as follows: One in the center behind the screen, one to the extreme right, and the other to the extreme left in back of the screen.

A fourth set of speakers consists of

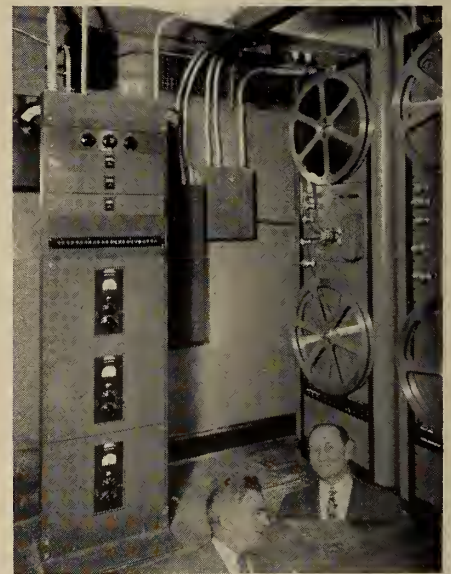
Magnetic Sound Reproducer for 3-D 'House of Wax'

THREADED FOR
REPRODUCING

THREADED FOR
REWINDING



1. Feed Panel Pilot Light; 2. Film Feed Panel; 3. Control Panel; 4. Film Drive Panel; 5. Film Takeup Panel; 6. Takeup Panel Pilot; 7. Jack Strip; 8. Pre-Amplifiers, and 9. Side With Magnetic Coating.



Stereophonic sound reproduction for Warners' "House of Wax" at the N. Y. Paramount Theatre: the rack on the left-hand side showing 3 amplifiers is the 3-channel stereo sound system. The two racks of equipment on the right-hand side are 3-channel magnetic tape reproducers which provide continuous performance without intermission. Inset in photo at lower right are (left) Bill Mueller, director of recording for Warners, and (right) Harry Rubin, director of projection for U-P Theatres.

approximately 18 small individual speakers mounted in suitable cabinets installed in the balcony and lower floor sections of the theatre. These speakers are located in the rear sides and are connected by means of matching transformers. This set of speakers is fed by the existing theatre amplifier system which, as mentioned previously, carries the auditorium music and sound effects which originates on the right-eye picture optical sound track.

Emergency Operation

In case of emergency operation, or when it is desired to reproduce only

the *monaural* soundtrack, a changeover device enables the input to be switched from the right-eye picture machine to the left-eye picture machine, and at the same time the output of the main existing theatre system which in stereophonic operation feeds the auditorium speakers, can be switched to the center-stage horn system. In this manner normal non-stereophonic theatre sound is reproduced.

Motor Drives

The motors of the two projectors which are used for the right- and left-eye pictures must be kept in perfect synchronism with the magnetic reproducer in order to properly present the 3-D picture and stereophonic sound. This is accomplished by having the two projectors and the magnetic reproducer interconnected with interlock motors. Once interconnected, switches provide the following control sequences:

1. Line up
2. Lock
3. Run

Under these conditions all three machines are threaded, aligned, locked into position and started simultaneously and provide for perfect synchronism. The switches for the interlock system are so arranged that by disconnecting interlock switches, *individual normal control of each projector motor* for the presentation of "flat" pictures is possible.

Since, as previously indicated, the Paramount installation provides for *continuous* showing, interlock systems are so arranged that there are two groups of motor controls:

One handling two projectors and one magnetic reproducer, and the other handling the two projectors and other magnetic reproducer.

Through the close cooperation of Harry Rubin, U-P Theatres director of projection; Paul Bracca, stage director of the Paramount Theatre, and R. W. Kautzky and Fred Hall of Altec Service Corp., the Paramount stereophonic installation is not only the most elaborate but without doubt the most complete modern theatre visual and sound projection system ever conceived. As the first such installation in the world, it should set high standards for the rest of the industry to follow.

[NOTE: IP invites queries from the craft relative to any phase of 3-D, stereo-sound projection.]

3-D Big Topic at SMPTE Convention

STEREOPHONIC sound, 3-D and wide-screen pictures will be the featured subjects in a program of 61 technical papers and demonstrations scheduled for the 5-day convention of the Society of Motion Picture and Television Engineers starting April 27th at the Los Angeles Statler Hotel.

About 1,000 motion picture and television technicians are scheduled to attend the meeting, according to Jack Servies, SMPTE convention vice-president and vice-president of National Theatre Supply. The program includes a number of technical papers on television which will be of great interest to the television engineers who meet the same week at the Los Angeles Biltmore Hotel with the National Association of Radio & Television Broadcasters.

Mitchell Wolfson, leading theatre owner, will give the engineers an experienced exhibitor's viewpoint on 3-D, wide-screen pictures, theatre television and drive-in problems when he leads off the convention program as guest speaker at the opening luncheon.

Included in the convention schedule is a demonstration of CinemaScope, complete with stereophonic sound on a 65-foot screen, through the courtesy of the 20th Century-Fox Film Corp.

Technical sessions include addresses by Dr. Harvey Fletcher, an outstanding authority on sound and hearing; a talk by R. A. Sherman, of Bausch & Lomb on stereo vision, a tour of the CBS Television City, and an engineering symposium on stereo motion pictures with J. A. Norling, R. J. Spootiswoode and A. J. Hill conducting a panel discussion of stereo production and exhibition.

A screen brightness symposium and papers on drive-ins will appeal to equipment men and exhibitors, particularly a report by R. L. Estes, of Eastman Kodak on the effects of stray light on projected picture quality.

Following is a summary of technical papers to be read at the convention that are of particular interest to the motion picture craft:

HUMAN VISION AND 3-D MOTION PICTURES

R. A. Sherman

Bausch & Lomb Optical Co., Rochester, N. Y.

Viewing of stereoscopic motion pictures has important therapeutic values for the in-

dividual. Benefits to the young child from observation of properly made stereoscopic pictures will be discussed. This paper will be followed by descriptions of current stereo production techniques by Paramount Pictures Corp., Warner Bros. Pictures, M-G-M Studios, and RKO Radio Pictures. These talks will be illustrated with demonstration film.

WESTREX FILM EDITOR

G. R. Crane, F. Hauser and
H. A. Manley

Westrex Corp., Hollywood, Calif.

This paper describes a film-editing machine which employs continuous projection resulting in quiet operation. It accommodates standard picture and photographic or magnetic sound film as well as composite sound-picture film. Differential synchronizing of sound and picture while running, automatic fast stop and simplified threading features in the film gates with finger-tip release materially increase operating efficiency.

A NONINTERMITTENT PHOTOMAGNETIC SOUND-FILM EDITOR

Walter H. Hicks

Centaur Products Corp., Manhasset, N. Y.

The direct editing of magnetic sound tracks without resorting to photo- or ink-traced visualizing is discussed as an integral part of a film-editing machine. Composite photo and magnetic track scanners are reviewed. Nonintermittent methods for the projection of films on a rear-vision screen of comparatively large size and selective wall-screen picture projection are described. Editing, copying, recording and re-recording of magnetic sound tracks on an all-purpose machine is demonstrated.

RECENT DEVELOPMENTS IN CARBONS FOR MOTION PICTURE PROJECTION

F. P. Holloway, R. M. Bushong and
W. W. Lozier

National Carbon Co., Fostoria, Ohio

Recent developments in projector carbons are discussed with particular reference to the requirements of such motion picture theatre developments as outdoor theatres, 3-D pictures and wide-screen processes.

THE EFFECTS OF STRAY LIGHT ON THE QUALITY OF PROJECTED PICTURES AT VARIOUS LEVELS OF SCREEN BRIGHTNESS

Raymond L. Estes

Eastman Kodak Co., Rochester, N. Y.

The influence of stray light on the quality of projected pictures has been studied and data are presented showing the effects at various levels of screen brightness. Changes in the picture reproduction by stray light may easily be confused with poor print quality. From the results obtained, it is concluded that a standard of screen brightness may be misleading unless the amount of stray-light brightness is limited to a fixed proportion. These results indicate that for

(Continued on page 32)

IN THE SPOTLIGHT

SETTLEMENT of the dispute between IA Local 171, Pittsburgh, Penna., and the Warner Theatres management relative to the first showing in the Local's jurisdiction of a 3-D picture ("Bwana Devil," IP, Feb. 1953, p. 20) was settled to the satisfaction of Local 171 on the basis of a $9\frac{1}{10}$ increase in wages for such "unconventional" showings. The 1951 contract negotiated by Local 171 expressly stated that it did not apply to "conditions . . . not in existence" at that time.

This provision was invoked by the Pittsburgh Local when a 3-D hove into view. This, asserted Local 171, was a "new condition," a "new medium." After a series of events which included the closing of the "Bwana" theatre for two days and an appeal to the IA General Office, the Local 171 men returned to work with the understanding that a settlement of the dispute would be retroactive; and it was, on the aforementioned basis.

This incident points up the oft-stated stand of IP that 3-D, Cinerama, or CinemaScope showings warrant not only a higher scale but *additional* manpower. Admission scales of themselves have only a slight bearing on the situation in view of widespread competent opinion that the success of any and all of these processes depend solely on the *quality of projection work*.

To quote directly from an address by Herbert Barnett, president of the Society of Motion Picture Engineers and vice-president of Cinerama, Inc., before the recent convention of the Independent Theatre Owners of Ohio:

"Don't go in for 3-D unless you can do a top-notch job of projection. Unlike the presentation of conventional pictures, anything less than fine projection destroys what you are selling. . . ."

IP holds that the vast majority of projectionists always put on a good show; but it is equally insistent that if the industry *as a whole* is to benefit (profit) as a result of the various news processes, the projectionist as an integral, if frequently forgotten, figure

in the industry scheme of things is entitled to a slice of that profit.

- Two shifts, each one consisting of five men plus an additional relief man, make up the projection crew at the Detroit Music Hall where Cinerama is now being shown. One man is stationed in each of the three specially built projection rooms located on the main floor of the theatre, and a fourth man in the regular projection room in the balcony of the theatre. The fifth man is in charge of the "mixer," which is placed in front of the downstairs center booth. Roger Kennedy, business representative for Detroit Local 199, was in charge of negotiations for the Local.

Harland Holmden, for many years business representative for Cleveland Local 160, has been appointed by IA President Richard Walsh as assistant IA president to succeed the late Thomas J. Shea.

- The New York State Association of Motion Picture Projectionists will hold its 1953 Spring meeting on Monday, May 11, 2 p.m., at Frank's Tavern, East Main Street, Middletown, N. Y.

- A gold life membership card in Local 762, San Luis Obispo, Calif., was awarded veteran member Edward Smale at a luncheon tendered in his honor. The luncheon was attended by brother projectionists who traveled from Lompoc to Paso Robles, a 100-mile coastal area under the jurisdiction of Local 762, and by trade union representatives from the San Luis Obispo and Santa Barbara counties. Also present were Earl Calvert, head of Lompoc Theatres, Inc., and T. Dickson, the city manager, who paid tribute to Smale for providing the city of Lompoc with entertainment for the past 31 years.

- The recent death of Jack Mitchell, sales manager for La Vezzi Machine Works in Chicago, came as a shock to his many friends in the industry. Mitchell had been in failing health for some time, but he seemed to be making a comeback when he was stricken.

- Anybody interested in obtaining back copies of IP, from 1944 through part of 1951, may do so by writing to Ludwig Work, 3854 W. Wilcox, Chicago 24, Ill. Work is moving to a new home next month and would like to dispose of these copies (gratis) to some interested party or parties.

- We are happy to report that Fred Thome, secretary for Local 650, Westchester County, N. Y., is now home recuperating from a recent heart attack, after three weeks in the hospital.

- The 1953 AFL Union Label Industries Show will be held in the Municipal Auditorium in Minneapolis, April 18-25. This will be the 8th all-

ERNEST SMALE AWARDED LIFE MEMBERSHIP CARD IN SAN LUIS OBISPO LOCAL 762



Acting for the San Luis Obispo Local, Carl G. Caaper, 5th IA vice-president, presents a gold life membership card to veteran member, Ernest Smale. Shown above are (l. to r.): Lupe Diaz, president of 762; Mante Payne, Caaper, Smale, Clair McLaughlin, Local business representative, and Thomas Chan, secretary.

AFL exhibition of union-made products, and it is expected to equal, if not better, the record attendance for previous shows. "These annual exhibitions help to promote wider understanding of the aims and objectives of the free trade union movement," declared AFL President Meany. "They serve to highlight the advantages of true collective bargaining between unions and employers, as symbolized by the use of the union label, shop card, and service button. . . . BE UNION—BUY LABEL."

- The many friends of Matt Kennedy, popular member of Local 273, New Haven, Conn., will be glad to learn that he is recuperating from recent surgery.

- Appointment of Marty Bennett as regional manager of the West Coast region of the RCA Victor Division was announced this month. Previously Ben-



Marty Bennett,
West Coast
regional
manager for
RCA Victor
Division.

nett served as assistant manager of the company's Eastern region with offices in New York City. He has also been manager of RCA theatre equipment sales at the division's headquarters in Camden. He joined RCA as a theatre equipment sales representative in 1946, following 14 years association with the motion picture theatre industry, mainly with Warner Bros. theatres.

- Vancouver (Canada) Local 348 held its first dinner-dance April 12 at the

Nat Golden to Top Bar

Nathan D. Golden, Director, Motion Picture, Scientific and Photographic Products Division of the National Production Authority, was recently admitted to practice law before the Supreme Court of the United States. Nat has been a member of the District of Columbia bar for 20 years. His admission to practice before the Supreme Court was moved by Harold Schilz, well-known Washington attorney.

Nat, veteran of World War I, was an active, and now a lifetime, member of IA Local 160, Cleveland, Ohio.

Flame Country Club. The Local plans to make this an annual affair.

- James A. Sipe, member of Pittsburgh Local 171 for the past 44 years, was recently named Deputy Secretary of the Department of Labor and Industry for the State of Pennsylvania. The appointment was made by Governor John S. Fine. Sipe is the father of James V., business representative for the Local.

- Fresno Local 599 recently signed agreements with four local drive-in theatres which call for a 15c per hour wage boost for the projectionists, plus two-weeks paid vacations. Dallas Page, business representative for the Local, also announced that the exhibitors agreed to a health and welfare plan to which they will contribute each month.

- A ruling in favor of the IATSE was recently handed down by the National Labor Relations Board in a jurisdictional dispute between the IA and the IBEW over the operation of front and rear screen projectors in the New York Tv studios of the Columbia Broadcasting System. CBS, in filing an unfair labor practice charge against IBEW, alleged that the union induced its members, who operate the Tv cameras, to engage in a strike action in an attempt to force the broadcasting company to assign the operation of the projectors to the electrical workers' union. The Board sustained this charge and found that the operation of these projectors "is completely disassociated from the Tv camera and all other electronic equipment, and that the operators of such projectors have no need for *intensive* electronic training."

- We were glad to learn that William G. Thompson, old-line member of Pittsburgh Local 171, has sufficiently recovered from his long illness to once again take part in the Local's activities and is now serving as a member of the executive board.

- One of the recent out-of-town visitors to the offices of IP was Stephen Karkula, member of Local 266, Jamestown, N. Y. We had quite a chat recalling the early days of the industry, and although Karkula has had a varied career, projection has always taken first place in his heart. In the early days of motion pictures when a projectionist's pay was hardly enough to keep him in "peanuts," Karkula ran pictures



Stephen Karkula ready to start the show.

at night in a loft above a store, and augmented his projectionist salary by working days as a printing pressman. When conditions improved, he devoted all his time to projection work and for the past 35 years has been associated with the Shea Theatres.

In addition to his work in the theatre, Karkula operates a sound projector repair shop and has invented several gadgets for the projection room—his most successful ones being several types of carbon jaws.

His hobby over the years has been the collection of old-time motion picture equipment. This collection eventually became so extensive and took up so much space that he recently disposed of many of the pieces. His most recent sale was of a No. 1 Motiograph 35-mm projector, which he claims is still in good working condition.

Huff Carbon Cooler

Tests of the Huff Hy-Candescent carbon-cooler, aimed at solving the pressing problem of getting more light on the screen for the showing of 3-D and wide-screen pictures, were conducted recently at the Loew's State Theatre in N. Y. City.

The cooler, a monel metal device attached to the carbon of a high-intensity lamp, permits the use of higher amperages in the arclamp, thereby producing more illumination, without burning up the carbon at a prohibitive rate of speed.

Manufactured by the Hal I. Huff Manufacturing Co., of Los Angeles, the cooler has often been used by drive-ins and in rear-projection process shots at the film studios, but not in indoor theatres. The cooling action is obtained by channeling a stream of water through the monel-metal device surrounding the carbon by means of a re-circulating water pump.

IA-IP Amateur Radio Bulletins

1952 Contest Winners

By AMOS KANAGA, W6BAA

Secretary, Local 409, San Mateo, Calif.



HERE they are at last fellows—the winners of the 1952 IA-IP Contest. Congratulations to each one of you because you really earned your prizes. First place goes to Brother Frank Champlain, W6PFF, Local 150, for the second year in succession. Frank is the all-time high winner and the man who has made more QSO's than anyone.

Second place goes to W6BVO Paul Hunter, of Local 191, Cedar Rapids, Iowa. Paul did a mighty fine job and is still sending them in. Third place goes (at last) to W6UMZ Jack Steurhoff, Local 159, who sent in a whopping good list with apologies for not having more contacts.

Fourth prize goes to W6GSW Jim Evans, Local 242, who never fails to come through with a stack of good ones. When Jim wrote, he said he didn't think he had a Chinaman's chance. In fifth place, but showing first in Class two, is Slim Kilbourne, VE3BZJ, from up there in Wallaceburg, Ontario. Slim made a very nice showing. It appears now that he worked more of the boys than he originally logged. Congratulations.

The sixth spot is split between W6LYD Don Johnson, Centralia (Wash.) Local 401, and none other than another W6 brother, George Abrams, W6FOP, of San Diego area, Local 297. The seventh spot belongs to W5DYV Paul Belian, of Local 604, a Texas man. Paul is first in Class 3 and entitled to bid on the prizes—didn't think you'd make it, did you Paul?

Distributing Prizes

Now, let's get down to business and talk about distributing the prizes. As previously mentioned, the first winner gets first choice, the second winner gets second choice and so on. Be sure to make first, second and third choices. If there is any mixup we will drop the interested party a line and straighten out the situation.

In case anyone has forgotten here is a list of the prizes and names of the donating firms: Marmax Electronics offers a Kilowatt Rothman Marmax

Modulator; World Radio Labs has donated a B and W Grid Dipper, two \$10 merchandise orders, one \$5 merchandise order; The Gonset Co. is giving one Gonset 100%er, one Gonset Noise Clipper, and one Roll Gonset Line.

You know, this was just about the toughest contest in the last three years

IA-IP CONTEST WINNERS

First Prize		
W6PFF	Frank Champlain	L. 150
Second Prize		
W6BVO	Paul Hunter	L. 191
Third Prize		
W6UMZ	Jack Steurhoff	L. 159
Fourth Prize		
W6GSW	Jim Evans	L. 242
Fifth Prize		
VE3BZJ	Slim Kilbourne	L. 622
Sixth Prize		
W6LYD	Don Johnson	L. 401
W6FOP	George Abrams	L. 297
Seventh Prize		
W5DYV	Paul Belian	L. 604

due to terrible band conditions. Ten meters a solid band for most of the IA gang contacts folded so flat it looked like vaudeville. Twenty was pretty good, but the big DX men in that area smeared some of us off and good old 80 meters was our mainstay.

Hard Contest Conditions

Too late in the year, the boys went on CW on 20 and 40 with a few, and

a very few at that on the new 21MC band. The stations worked were all hard fought for. In comparison to the contests of other years, it must have been at least three times as difficult. The only point in our favor was the wonderfully increased list of known IA men who are radio hams, and the fact that so many of us learned about the contest through IP.

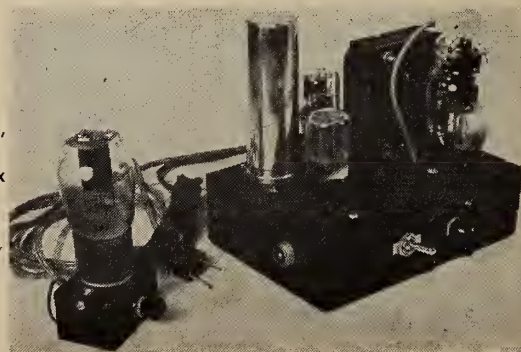
Here and There: Interesting card from old timer Ed Karcher, now W4DOL, of Local 482. Ed has held the same call letters in four different districts. He has been W9DOL, W6DOL, W5DOL, and now W4DOL—a lot of DOL! . . . It looks like a lot of you will come through with your "Worked 10 IA-IP Award" in the near future. . . . Those of you who have a very few to go for your "Worked 25 Gold Award" should remember the 40 fone band is the answer. On the high end it's pretty hot out this way . . . 75 meters is still the standby. I'll sked with any one of you if you keep it under 40 per—way under! . . . By the way, business-wise, things are really looking up for us with 3-D now an established deal. We were just wondering who amongst us will come up with 4-D. . . . Who's Kiddin?

We thought we scraped the bottom of the barrel for new listings, but we were wrong as usual—not as many as some months but quite a few nice additions, don't you think? You can get a mimeographed list from us, care of IP, but we think a subscription to IP is probably your best bet. Then you automatically get new additions to the list as soon as available.

73 gang.

Available without charge (except the cost of return postage) is Eastman Kodak Company's 13½ minutes, 16-mm sound Kodachrome film entitled "Behind Your Snapshot." This reel takes the audience through Eastman's plant to see the manufacture of photographic film. It is available from Eastman Kodak's Camera Club and School Service, 343 State Street, Rochester 4, N. Y.

First prize award in the IA-IP 'ham' contest—a Kilowatt Rothman Marmax Modulator.



History of the American Labor Movement

Prepared by the U. S. Dept. of Labor, this history traces labor activity and legislation from Colonial times to today.

Chapter VIII. Expanding Political Interests

IN politics, both the AFL and the CIO as well as most of the independent unions, officially continue to adhere to Gompers' slogan of "reward labor's friends and defeat labor's enemies." Unions have been increasingly active in political campaigns in recent years and have frequently been important factors in local and national elections. Their support is usually determined by the issues and the candidates of each particular election rather than by adherence to any political party.

Labor groups also maintain representatives in Washington to indicate their attitudes on legislative proposals before Congress and to press for action which they consider desirable. Similar "legislative representatives" are maintained in most States to follow the progress of State legislatures.

Passage of the Labor Management Relations Act of 1947 (Taft-Hartley Act) stirred organized labor to renewed efforts in the field of political "education" and activity. The AFL at its annual convention in October, 1947 established "Labor's League for Political Education" to meet the "need for sound political education and effective political action by organized labor." The league was established as an independent organization, financed by contributions of AFL members and their friends.

The Political Action Committee of the CIO, which was founded in 1943 to present the CIO viewpoint on political matters and encourage worker participation in national and local elections, was also revitalized following the passage of the Taft-Hartley Act. The independent railroad unions also created their own political league. Similar committees were appointed by several of the larger national and international unions. As with the AFL, these organizations were financed by voluntary contributions from individual workers.

Labor's Peacetime Activities

On the international front, labor's wartime interest in foreign affairs found peacetime outlets. Representatives of American unions assisted the United States Military Government to reorganize shattered labor groups in the occupied countries. Food, clothing, and supplies were furnished to help relieve suffering and destitution. Representatives of the AFL and the CIO joined in March 1948 with labor

groups from Marshall Plan countries in a significant conference to consider the participation of labor in the rehabilitation of Europe.

With the establishment of the Economic Cooperation Administration to handle Marshall Plan aid, a number of AFL and CIO representatives were appointed to assist in the labor phases of ECA. Both the AFL and CIO have international policy committees to guide and coordinate their international activities.

AFL Nixes 'World Federation'

In the autumn of 1945, labor organizations from 54 countries (including the CIO, the British Trades Union Congress, and the Soviet Labor unions) formed the World Federation of Trade Unions. The American Federation of Labor declined to participate in the formation of the WFTU on the ground that the Soviet unions did not consti-

tute a free and democratic trade-union movement. Early in 1949, the CIO together with the British Trades Union Congress and several other national groups withdrew from the WFTU which had become a tool of international communism.

Other union enterprises include life insurance and health benefit and pension programs, recreational activities, cooperatives, labor banks, credit unions, radio programs, and housing projects. In recent years the organized labor movement in the United States has manifested an increasing interest in social and political problems, both local and national in scope, and in international affairs.

[TO BE CONTINUED]

Cinerama Expansion Planned

Plans to bring Cinerama to many additional cities throughout the country are now under way, it was reported recently when the Cinerama organization placed an order for 60 additional Excelite projection arc lamps with National Theatre Supply. The National Excelite, a 75- to 130-ampere, high-intensity, reflector-type projection arc lamp, is said to have been selected by Cinerama after much testing because of its ability to maintain constant light intensity and constant color temperatures with a minimum of manual adjustments.

Wide-Angle Lenses—Coming and Going

A friendly critic submitted a recent publication of the U. S. Bureau of Standards relative to wide-angle *photographic* lenses which, it seemed to him, disproved certain statements appearing in IP. An eminent authority on optics herewith contributes an opinion on this phase of wide-angle-lens *projection*. Coming and going would seem to constitute opposite directions.

THERE is absolutely no conflict between the recent report of the Bureau of Standards on wide-angle aerial photographic lenses and the statements made in IP's "Monthly Chat" (p. 3) for March last. In aerial photography with wide-angle lenses the requirement is to get something registered on the film for an exposure time which will not over-expose the center of the film. Therefore, by using a so-called negative distortion they compress the edges of the film over a small area of the film and are able then to register an image.

In printing this negative they can eliminate the distortion and by various means are able to *equalize* the light on the print so as to obtain a *uniform* printing on the paper. This is a printing process, *not* projection of motion picture film, therefore it does not apply to the field referred to in your article. What means they use to equalize the light in the printing process is now known to me, although the most practical one is to reduce the

exposure at the center of the field either by using filters or masks.

Flatness of Field?

One drawback of the negative distortion is that the resolving power at the edge of the field is very much reduced, and if you have ever seen any pictures taken with wide-angle lenses, you will realize that the fading out of the resolving power will not be satisfactory for motion picture projection.

Another drawback, mentioned in your article and which is not offset by anything mentioned in the Bureau of Standards publication, is that the speed of wide-angle lenses is rather low.

Your article does not say anything which is not technically correct, and this wide-angle proposition resolves itself to the question of how much light and how much *definition* you can sacrifice in order to increase the *size* of the screen. No doubt the public will have to be the judge, and we shall have to await their verdict.

Outline of 16-mm Projection

Presenting some comments on the history and operation of 16-mm projectors, abstracted from a very complete text-book on the subject.*

III

TO DETERMINE the lumens output required from a projector for any desired screen brightness, the following formula may be used:

$$\frac{\text{Lumens required}}{\text{Desired brightness (in foot lamberts)}} \times \frac{\text{Area of screen (in square feet)}}{\text{Reflection coefficient of screen (expressed as a decimal)}}$$

The light output mentioned above represents about the best obtainable from present designs, with most commercial machines falling short of the above performance by varying amounts. All manufacturers are prepared to guarantee the lumens output of their machines under specified conditions. It is well for a purchaser to obtain the information concerning the machine he proposes to purchase as a part of the manufacturer's guarantee of performance.

Although screen brightness as low as 5 foot-lamberts are considered passable, really good performance requires brightness in the order of 10 foot-lamberts, which will match quite closely the brightness found in 35-mm motion picture theatres. Table II shows the required output of a projector in lumens for a number of different sizes of screens having the usual 70% reflection factor as applicable to a used matte screen in good condition. In all cases, the height of the screen is three-quarters of its width.

Kodachrome Brightness Level

Higher rather than lower screen brightness are desirable for the projection of Kodachrome and other integral tri-pack positives. There is much more

detail in the shadows of Kodachrome dupe prints than in the highlights; for this reason somewhat higher screen brightness for such film are preferable to the more customary over-exposure of the color duplicates that is resorted to by the film laboratory for the purpose of obtaining better projection with inadequate screen illumination.

As can be seen from the table, a 750-w. projector cannot be expected to do more than fill a 6-ft. screen. If a larger screen is to be filled, an arc projector is required. Properly designed arc projectors are available that can deliver over 1000 lumens, and are suitable for a screen of approximately 10 ft. in width.

Picture Projection and Audience

The widely used sound projector of the 750-w. lamp type (equipped with a 2-in. lens) will be presumed as a reference. The projector is customarily placed near the rear-center of the projection space.

A matte screen (also called diffusive or flat-while) should be used in every instance possible, since it provides the widest angle of satisfactory viewing. A screen is considered dirty if it appears dark in comparison with a clean sheet of writing paper, and should be replaced, for it is wasting from one-quarter to as much as one-half of the light thrown upon it by the projector.

Auditorium Light Level

Good tonal quality of the picture is impossible if the room in which the audience is situated is not adequately darkened. A general room light of about 1/10 ft.-candle is not harmful; this is the illumination level at which it is difficult but not impossible to read ordinary newspaper type. If the walls of the room are light-colored and the

room is small, this general level of illumination may be reached by the light "sprayed about" by the screen itself during projection.

[TO BE CONTINUED]

Industry Veteran Ushers In a 'New Theatre Era'

Herewith W. W. Simons, one of the original Vitaphone engineers, since associated with ERPI and Altec introducing the Westrex triple-track magnetic reproducer which is being supplied by Altec Service Corp. for stereophonic installations throughout the country for "House of Wax" (Warner Bros.), as well as installations for CinemaScope presentations from 20th-Century Fox. These reproducers are also being used by Altec on all installations for the triple-track, magnetically-recorded stereophonic pictures being released by major studios.

Says Simons: "I am proud to introduce this new phase of sound equipment, since I had the same pleasure 25 years ago in introducing the first sound equipment to



W. A. (Bill) Simons, industry veteran of the Vitaphone and ERPI days and now with Altec Lansing Corp. on the West Coast, is shown standing by an A-L three-track magnetic recorder which ushers in a new era in sound.

this industry as a Vitaphone staff member. Since then I have been with ERPI, then Altec Service, and now Altec Lansing out here on the Coast. I feel that we are on the eve of a new era in show business. My very best regards to my projection boys throughout the country."

"Gates of Power," 16-mm sound film showing hydro-electric dams built by British engineers all over the world, and associated beauty of scenery and running water, has been made available by British Information Services. It runs 19 minutes, rents at \$2.50, sells at \$55.00.

*Cond. from "16-mm Sound Motion Pictures," by W. H. Offenhauser, Jr., published by Interscience Publishers, Inc., New York.

TABLE II. Lumens Required for Different Screen Sizes with Light Level of 10 Foot-Lamberts

Screen width, in.	Lumens output required	Screen width, in.	Lumens output required
40	119	84	525
50	186	114	977
67	334	138	1410

NEWS PROJECTIONS

COLUMBIA Pictures has adopted an aspect ratio of 1.85 to 1, and 3-channel magnetically recorded sound for all future productions, according to Harry Cohn, president. He also reports that the studio now has a camera which will provide prints for flat, 3-D or large-screen projection. . . . Progress for the Cinema-Scope wide-screen method of projection is indicated by a recent batch of equipment orders, totalling 118 houses, 20th Century-Fox announced.

* * *

Paravision, Paramount's wide screen process, will receive its premiere soon when "Shane" opens at the Radio City Music Hall in New York. Aspect ratio in this case is 1.66 to 1. "Shane" was filmed in the normal flat process with conventional screen proportions, but a change is effected by the use of special projection lenses. . . . Jack Warner announces that Alfred Hitchcock's next picture, "Dial M for Murder," will be shot in 3-D. WarnerColor and stereophonic sound will also be employed. . . . Warner Bros. also made news this month with its aggressive New York television promotion for the 3-D, "House of Wax." Twelve 10- and 20-second spots were used on WNBT and WABC-TV.

* * *

Before very long, color television may be competing with 3-D and wide-screen movies for public attention. CBS is reported to have abandoned all plans to exploit its non-compatible system of Tv color, which won FCC approval a few years ago even though it left the set manufacturers cold. The way is now open for early FCC hearings on the compatible system developed by RCA. This system poses fewer problems to the industry because existing Tv sets can pick up compatible color transmissions in black-and-white. . . . RKO Radio has selected "Louisiana Territory" as the final title for its first 3-D picture. Filmed with the Norling Camera, it will be released May 30.

* * *

A good example of the impact of 3-D on the exhibition business is the announcement by Natural Vision that it has shipped 12 million polaroid filters to more than 600 theatres. The company re-



Super Snaplites are better indoors or out. Sharper Pictures, Greater Contrast, More Light, Better Definition all add up to happy patrons. Make your Movies Better Than Ever; use Super Snaplite lenses. Super Snaplite Projection Lenses give a true speed for f/1.9 in every focal length up to 7 inches. Ask for Bulletins 207 and 209.

Also Series II SNAPLITES with a speed of f/2.0

KOLLMORGEN
Optical
CORPORATION



PLANT:
NORTHAMPTON, MASSACHUSETTS

NEW YORK OFFICE: 30 CHURCH ST., NEW YORK 7, N. Y.



ports that it now has 83 million on order with the Polaroid Corp. . . . First public tests of 3-D at a drive-in occurred recently in Chicago where the Twin Open Air Theatre showed "Bwana Devil." RCA Super-tensity lamphouses, operating at 180 amperes, provided the illumination, and airjet blowers were used to cool the film.

* * *

Universal-International is preparing to promote an all-purpose screen with an aspect ratio of 2 to 1. U.I. thinks that an 18 by 33 foot metallized screen with some curvature might be an economical answer for most theatres, enabling them to play pictures filmed in most of the new processes. . . . Single projector 3-D is still a possibility. King Bros. announced in Hollywood that it would distribute a new German 3-D process developed by Zeiss Ikon that uses only a single strip of film and a single projector. A special device attached to the projection lens is said to produce stereo. Polaroid glasses are required.

The advent of 3-D and wide-screen motion pictures has made more important than ever test films for visual and sound check-up. Address the SMPTE at 40 West 40th St., New York 18, N. Y.

Too Far, Too Fast?

Condensed from THE FILM DAILY

If the increasing frequency with which stories and feature articles on pay-as-you-see TV appearing these days are to be taken at face value, one may expect its advent to be the next big development in the video field. It could be, rather than color, Tv's answer to 3-D, especially if a way is found to give a stereo effect to video.

Tv today, with the sponsor the only source of income, is approaching the point where the production and time costs are too great for the advertiser to absorb. Considering that in a comparatively few years, the budget for Milton Berle's show has jumped from below \$20,000 to \$150,000, the latter the figure for next season, you realize that Hollywood isn't the only place where costs can get out of line. And bear in mind that as Tv stations increase, the overhead must mushroom way beyond the present level.

Who is going to pay these astronomical costs? The 15 advertisers now said to be bankrolling more than 50% of network shows? Well, what do you think, with Texaco bowing out as Berle's sponsor?

Pay-as-You-See Gaining

Eugene F. McDonald, Jr., Phonovision's pappy, and not a few others who think likewise, have been saying for some time that Tv needs an added source of income.

Get this: the American public, having had

a taste of top Tv shows, won't be satisfied with the shoddy, even if free. But it is prepared to pay—as we have been learning—for quality entertainment, including that for which higher box-office scales are in effect.

It has been many months now since the FCC received the Zenith petition asking its blessing upon subscription Tv. The hearing on the Zenith petition may not come before 1954.

At any rate, subscription Tv advocates are confident that there is no legal bar to it. International Telemeter, allied to Paramount is confidently predicting, via a piece in "Look" magazine, that in five to ten years not only will you get top entertainment of all kinds through its push-button set attachment, but it also will (quoting "Look"):

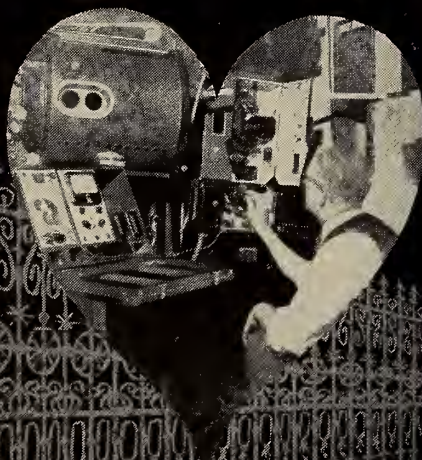
"1. Transmit to your home each morning or evening an electronic newspaper edited in length and subject matter to fit your own desires.

"2. Let you vote in your own living room before breakfast, then shoot your vote into a mechanical brain which will have complete election results all ground out before you're ready for a second cup of coffee.

3. "Take guesswork and fancy double talk out of public-opinion polls.

4. "Let you put a \$2 bet on a nag from your living room, electronically feed your bet through a track's pari-mutuel machines to make everything nice and legal, then cut your Tv set to the track so you can see the race you bet on. (An electronic bookie—yes?)"

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PERSONAL NOTES

D. C. COLLINS has been named vice-president of Altec Service Corp. following his retirement from Western Electric Co. and Westrex Corp., it was announced by G. L. Carrington, president of Altec.

Mr. Collin's experience in the motion picture field extends back for more than 25 years when he joined Electrical Research Products, Inc., upon its formation, later advancing to the position of vice-president



D. C. Collins, recently appointed vice-president for Altec Service Corp.

and member of the board of directors. After ERPI's merger with Western Electric he continued as manager of the ERPI Division. He has served as a vice-president and director of Westrex Corp. since 1941, and was a member of the board of directors of Altec Service and Altec Lansing since their formation.

NATHANIEL M. MARSHALL has been appointed manager of TV equipment sales by General Precision Laboratory, Inc., Pleasantville, N. Y. Previously he had been assistant manager, having joined GPL in 1950 as a commercial engineer.



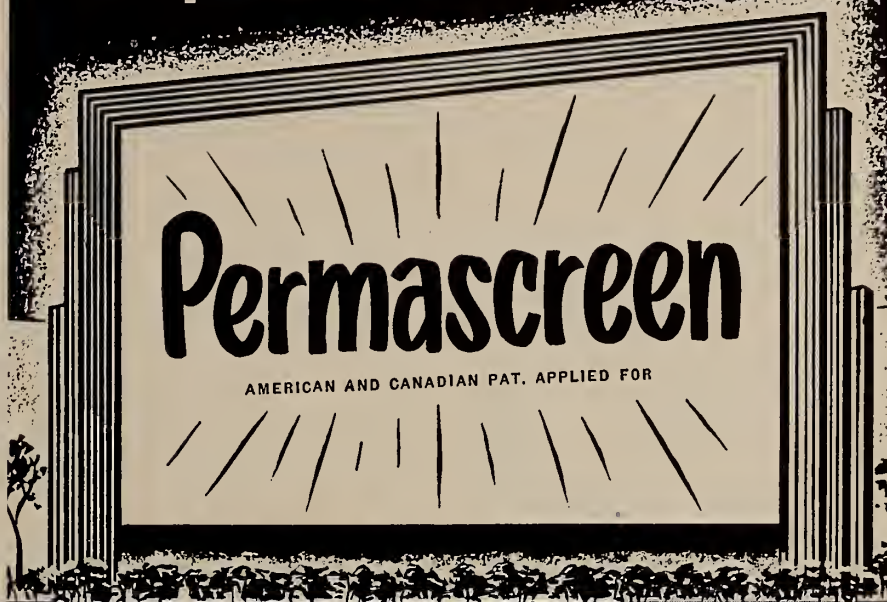
Nathaniel M. Marshall, TV sales manager for General Precision Lab.

A graduate of Brown University in 1943, Mr. Marshall was an electronics officer in the Naval Air organization, specializing in radio and radar. He continued with the Navy in a similar capacity as a civilian, and in 1948 was transferred to head up a TV research project.

TESMA's 20th Ann'y Show

New equipment for 3-D and wide-screen motion pictures will be featured at the Theatre Equipment and Supply Manufacturers Assn. trade show to be held in Chicago from October 31 to November 5. This year's show will mark the 20th anniversary of the equipment makers' organization. It was also announced that the Theatre Owners of America and the Theatre Equipment Dealers' Association will also meet in Chicago at the same time and three groups will hold joint sessions.

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- The ONE SCREEN that lasts for years and years and years!
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IA ELECTION

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LOCAL 371, EDMONTON, ALTA., CANADA

Al Davies, *pres.*; George Cox, *vice-pres.*;

D. McCardia, *sec.*; T. B. Howden, *treas.*; H. Hodgkinson, *bus. rep.*

LOCAL 398, MEADVILLE, PENNA.

Glenn Hayes, *pres.*; Len Wheeler, *vice-pres.*; August F. Bodisch, *sec.-treas.*; John P. Geiger, *rec.-sec.*; Russell Bortles, *bus. rep.*; Wheeler, Bortles, and Hayes, *board of trustees.*

OBITUARIES

JOSEPH L. MARKOFF, 60, member of St. Louis Local 143, died last month shortly after he was stricken with a heart attack while working in his garden. Markoff was formerly a member of Philadelphia Local 307, but transferred his membership to the St. Louis Local about 12 years ago.

HERBERT JOHN HILLS, executive board member of Toronto, Local 173, died recently at the age of 70. A member of the Local for the past 34 years, Hills took an active part in all union affairs until shortly before his death. He was a charter member of the Local, an officer of the International Projectionists Society, and a member of the Pioneers Club of Canada.

CARL KRUMREI, SR, 65, member of Omaha Locals 42 and 343, died at his home after a lingering illness. Krumrei was a former official of Local 343, and was well-known in the motion picture industry throughout Nebraska.

Big Profit in 3-D Viewers

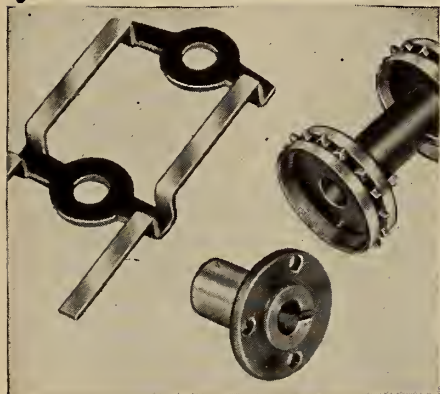
Just how profitable 3-D motion pictures will be to studios and exhibitors is open to question, but there is a man in Cincinnati who stands to profit heavily as long as this type of movie is turned out. That man is John F. Dreyer, a soft spoken engineer, who perfected a method of polarizing glass in 1946. Last December he received a phone call from Hollywood asking if his tiny factory can turn out 50 million pairs.

Dreyer now expects the gross business of his firm Polacoat, Inc., will jump from \$50,000 last year to at least \$1,000,000 in 1953. Hollywood found it necessary to beat a path to the door of the little firm

because Dreyer developed and holds patents on one of the two known methods of polarization.

In the Polacoat process, glass, plastic or some other dense substance is rubbed with rouge, a powdered polishing agent, in the direction that the lines of polarization are desired to take; then the rouge is washed off and a special black liquid applied. Dreyer describes this liquid as a dichroic liquid crystalline solution. The coated glass goes under a heating bar and the liquid that stays on the surface passes through a stage in which all the light-absorbing molecules line up on the field that the rouge treatment has set up.

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Manufacturers of Many Types of

FILM REWINDERS



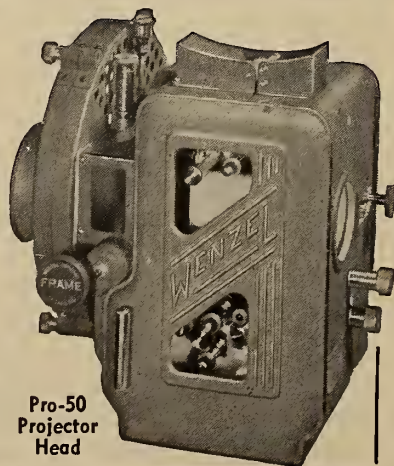
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16 M/M
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Film

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Chicago 16, Ill.



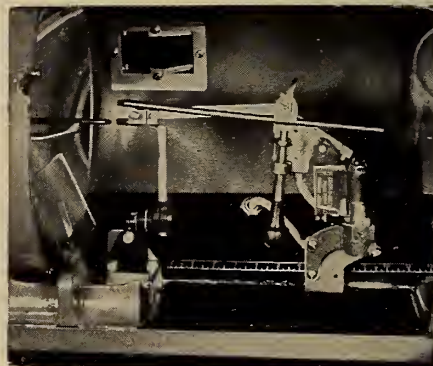
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Burning average lengths (3 1/4") down to 3/4" saves 2 1/2" or 22.2% of the carbon cost.

Uses positive carbon stubs of any length, without preparation. When entirely consumed, the new carbon goes into use without losing the light, or otherwise affecting lamp operation.



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EXPORT: Frazar & Hansen, Ltd.
San Francisco, New York, Los Angeles

Walker Metallized Screen for Both 3-D and Fiats

Projectionists who may be called on to advise exhibitors concerning the metallized surface perforated projection screen needed for 3-D showings will be interested in the specifications of the Walker Polarized High-Intensity screen distributed by National Theatre Supply. This screen is claimed to provide good light distribution throughout a theatre and to be very serviceable for both 2-D and 3-D films, a considerable economy factor.

In the past, some members of the craft have voiced doubts about metallized screens on the ground that they are too directional in their reflectivity for use in wide auditoriums or with tall balconies because they concentrated too much light in a small percentage of the seating area.

To make its point with regard to the adaptability of the Walker metallized screen to large, wide theatres, National Theatre Supply cites the case of the Roxy Theatre in the heart of New York's theatrical section. Charles Talley, chief of projection there, states that he gets satisfactory distribution of reflected light throughout all of the theatre's more than 5,000 seats, and at the same time, gets sharper resolution than with the usual white diffusive screen.

The Roxy did not install this screen out of any pressing need to prepare for 3D, but because they wanted it, Mr. Talley states. Improvements in the light distribution of this type of screen have made its use possible and desirable in auditoriums that could not conceivably have used older types of metallized screens without extremely poor light distribution.

Theatres not immediately planning to show 3-D films, but where purchase of a

new screen is contemplated, have a special interest in the ability of modern metallized surface screens to serve houses of every type. Buying a metallized screen now will eliminate the need to purchase another screen just for 3-D films which absolutely require this type of screen.

In physical construction, the Walker High-Intensity screen surface consists of metal flakes embedded in a plastic binder. The binder is said to be chemically in a state of maximum oxidation; it cannot be oxidized further, and therefore, will not burn and cannot turn yellow. The reflecting flakes are an aluminum alloy which the company claims is impervious to corrosion and cannot change in appearance or efficiency.

B. & L.-Fox CinemaScope Deal

An agreement to supply 20th Century-Fox with large quantities of anamorphic optical units for CinemaScope has been announced by Bausch & Lomb Optical Co.

The units B. & L. will produce for CinemaScope are known technically as "anamorphic adapters." CinemaScope requires one camera and one projector.

The taking unit squeezes a wide image onto regular 35-mm film, and the projection unit spreads it out again so that it fills a screen about twice as wide as the normal one. Stereophonic sound is used to heighten the illusion of reality.

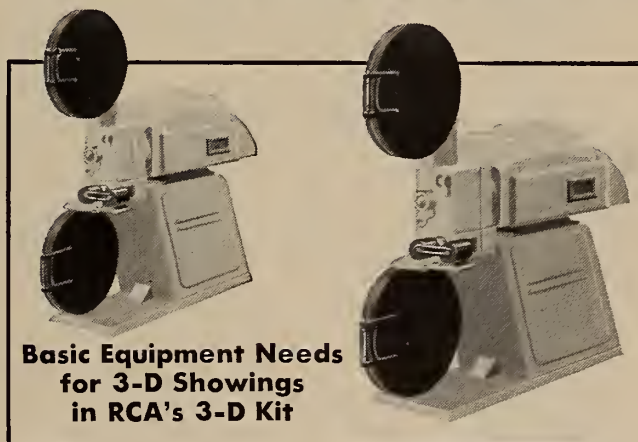
First, the optical firm will produce three types of units, one for taking cameras, and two for projectors. The units are designed to fit B. & L. Baltar and Super Cinephor lenses. The projection lenses will outnumber taking lenses by a large ratio. Fox plans to make taking lenses available to other producers as soon as they are manufactured. The studio has also announced that its entire program, consisting of high-budget pictures, will be made for CinemaScope.

All-Out Production

Work on the B. & L. contract is on forced draft; with all personnel having been actively engaged in the project for the past two months to get it on a production basis.

Normal B. & L. production schedule for such a new system would call for a design period of several months before manufacturing could even be started. Instead, the anamorphic units have been designed in a matter of weeks, with deliveries on the first batch scheduled for June 1.

FAST 3-D CONVERSION



Now, in a single, low-cost, quick-conversion kit, RCA supplies everything you need for easy conversion to three-dimension films. These few simple items equip your present projectors to handle all 3-D systems now in production:

1. Two selsyn motors, the most dependable interlocking method—(with mounting plates).
2. Silent chain and sprockets for connecting motors.
3. Blowers for port filters.
4. Upper and lower 5500-foot film magazines.

Ask your RCA Dealer about RCA's 3-D Kit—and—for flawless 3-D presentations—ask him about RCA's seamless silver screen.



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• The NEW, improved, positive method of permanently patching all types and makes of film—8mm., 16mm., 35mm., Trucolor, Technicolor, Kodachrome, Nitrate and Safety Film.



Used and endorsed by Projectionists in countless theaters.

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1438 North Clark Street Chicago 10, Illinois

SMPTÉ TO FEATURE 3-D

(Continued from page 21)

normal projection prints, the stray-light brightness of the screen should not exceed approximately 0.3 per cent of the screen brightness.

WESTREX STEREOPHONIC RECORDING AND REPRODUCING FACILITIES

John G. Frayne and E. W. Templin
Westrex Corp., Hollywood, Calif.

This paper describes new stereophonic recording channel equipment including a 6-position mixer and portable 3-channel recorder. For re-recording the previously described triple-track recorder-reproducer is available. For review room and theatre reproduction, a theatre-type dummy equipped for 3-channel stereophonic reproduction is described.

THE MAGNESCOPE

Rowland L. Miller
Magnescope Corp., Culver City, Calif.

Magnescope is a visual monitor for magnetic tape. It gives visual presentation of the information recorded on the tape without employing auxiliary equipment such as movable scanning heads, amplifiers, etc. The presentation is a variable-area display and thus gives indication of frequency and amplitude. The display remains stationary as long as the tape is motionless in the Magnescope, but movement of the tape is accompanied by

corresponding movement of the display.

Magnescope consists of a unique cathode-ray tube and its associated power supply. The cathode-ray tube is so constructed that the magnetic fields from the tape directly influence a beam of electrons which produces the variable-area display.

PROCESSING 16-MM COLOR FILM WITH A SILVER SOUND TRACK

John Fritzen
Cinecolor Corp., Burbank, Calif.

A description is given of the approach and final solution to the development of a silver sound track on 16-mm Cinecolor for use with the lead sulfide photocell.

MATCHING DENSITY TO PRODUCTION

Howard T. Raffety
Cinecolor Corp., Burbank, Calif.

Densitometry at Cinecolor matches use as closely as possible. To this end, densitometry of material to be used on optical printers is on a "specular densitometer," and densitometry of sound tracks is on a "sound reproducer densitometer." This paper describes these two densitometers.

IMPROVED COLOR FILMS FOR MOTION PICTURE PRODUCTION

W. T. Hanson, Jr., and W. I. Kisner
Eastman Kodak Co., Rochester, N. Y.

A number of negative and positive color films of the integral tripack type have been made available to the industry in recent

years. Four materials are described which can be used in a system of this type or which can be used in conjunction with existing commercial color motion picture processes.

OPTIMUM SCREEN BRIGHTNESS FOR VIEWING 16-MM KODACHROME PRINTS

L. A. Armbruster and W. F. Stalle
Eastman Kodak Co., Rochester, N. Y.
A light, normal and dark Kodachrome duplicate was made from each of three Kodachrome Commercial Film originals which were exposed normally, one stop under, and one stop over the normal. The best print of each scene and for each camera exposure was selected by a group of judges for each of six screen brightnesses ranging from 2- to 20 ft.-L. The best prints were then viewed at the six screen brightnesses. The optimum screen-brightness range was 9 to 15 ft.-L.

PICTURE QUALITY OF MOTION PICTURES AS A FUNCTION OF SCREEN LUMINANCE

Lawrence D. Clark
Eastman Kodak Co., Rochester, N. Y.

The relationship between the quality of projected motion picture prints and screen luminance has been investigated. The relative quality of optimum prints evaluated subjectively was found to increase with screen luminance until the luminance reached approximately 20 ft.-L., and then to decrease at the higher screen luminance levels. A range of screen luminance from about 10 to 45 ft.-L. gave picture quality within 10% of the best obtained.

A THEATRE LOUDSPEAKER SYSTEM WITH IMPROVED DIRECTIONAL QUALITIES

J. E. Volkmann, S. A. Caldwell and
A. J. May
RCA Victor Div., Camden, N. J.

A new type of theatre loudspeaker system in which improved directional properties have been incorporated is presented. The new loudspeaker produces a better ratio of direct to reflected sound energy over the entire frequency range in the audience area of a theatre than that obtained with conventional designs. This results in better presence and reduces the problems of crossover region phasing, without in any way affecting the frequency range or power handling capabilities.



the man
with
200 brainpower*

ALTEC SERVICE CORPORATION has more than 200 engineers actively engaged in the servicing of motion picture projection and sound equipment and the investigation of every new projection and sound technique including theatre television. Their knowledge of new equipment and improved servicing techniques is checked at Altec's laboratories and distributed to every Altec Service Man. This circulation of information provides your local Altec Service Man with the useful experience and knowledge of more than 200 fellow engineers. His warehouse of knowledge is your assurance of the right service at the lowest practical cost.



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TYPES OF THEATRE SOUND REPRODUCERS

(Continued from page 12)

tween the kinetic scanner and the sound sprocket should be somewhat slack when the projector is running at normal speed; and this desirable condition can be established only when the scanner functions properly.

In most cases the projectionist can readily tell whether or not the entire projector mechanism is running at a non-uniform speed. If he is certain that some cause external to the sound-head is responsible for wows, he should use his discretion as to the advisability of shutting down the show in order to find out if the picture mechanism is binding. But, first of all, the temperature of the driving motor should be checked.

The Cause of 'Flutter'

"Flutter" represents more rapid variations in film speed than wows. All variations from 3 to 20 cps may be classed as flutter. A little has already been said about flutter caused by the design of certain old-style soundheads; and to this we can only append the dismal comment that the projectionist can do little or nothing about it except yell for new soundheads and pray that he gets them before bad sound closes the theatre—permanently.

Flutter in rotary-stabilizer and other kinetic-scanner sound-heads, on the other hand, is usually curable because it is most frequently caused by flat spots on worn pressure rollers, especially on those of the felt-faced type. It is not a bad idea to heed manufacturers' advice to leave the pressure-roller assembly open when there is no film in the projector—though most of us have developed the habit, over the years, of leaving the projectors alone after the last two reels have been run off at night.

In rare cases some accident may have befallen the scanning drum or its shaft, causing the drum to wobble as it revolves. The wobble emerges from the speakers as a warble which only new parts can cure. A deposit of dirt

or caked emulsion and film wax on the drum is a cause of flutter that is never found when conscientious projectionists have charge of the equipment. The importance of cleanliness in the maintenance of soundheads is repeatedly stressed by all manufacturers and service engineers.

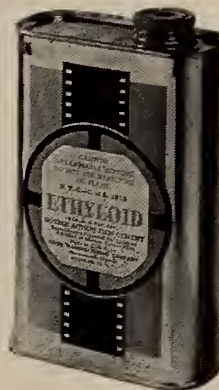
When Actors 'Gargle'

Whenever flutter occurs at a rate of 20 to 80 cps, it is called "gargle." It transforms the most velvety of voices into what sounds like a tonsil-flushing operation performed by the halitosis-plagued heroine of mouth-wash advertisements. Curiously, it is the heroine, not the hero, of the flickering drama who gargles, since only the higher frequencies of sound give noticeable evidence of the defect. She may get her man in the last reel; but we cannot help but feel sorry for the fellow in theatres where gargly sound prevails.

Gargle usually occurs in the older type of soundhead, being caused by bent wheel shafts or lop-sided sound sprockets. The only sure cure is replacement of the offending part; and this, as the writer has found, is usually the flywheel (or sound-sprocket) shaft.

The damage may come about through force injudiciously applied to the shaft when removing and replacing sound sprockets. These sprockets are frequently exasperatingly stubborn—they simply hate to be changed. But a little patience and extra time devoted to the

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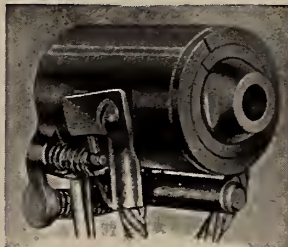


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task will do the job without springing the shaft. It seems almost unnecessary to warn against sandpapering the shaft in order to make a sprocket go on easier. This stratagem invariably results in a lop-sided sprocket positioning and the creation of gargle.

The flywheel end of a sound-sprocket shaft will not stand too much abuse, either. In certain instances gargle has been caused by rough handling of soundheads during installation.

Higher Frequency Distortion

The term "whiskers" applies to sound flutter of 80 or more cycles per second. The most interesting thing about whiskers is its uncanny ability to deceive many projectionists when they first encounter it. It does not affect low and intermediate frequencies at all; but to the higher frequencies this form of flutter imparts a raspy quality to the sound, often mistaken for the effect of a bad tube or an out-of-focus optical unit. Talented sopranos are made by whiskers to sound like gravel-throated blue-jays, and violins sing like saws being filed. The scientific test for whiskers involves the playing of a 3,000-cycle test film and observing the wave-form of the output on the screen of an oscilloscope. For routine checks the oscilloscope may be dispensed with—a trained listener is able to detect very small traces of "raggedness" in the 3,000-cycle tone, which has about the same pitch as the highest "G" which can be played on a violin.

There exists a special type of electrical non-linear distortion, called intermodulation, which imitates the effects of gargle and whiskers very closely when more than one tone is being reproduced. It will not, therefore, appear during the playing of a test film having but a single frequency recorded on it. Intermodulation arises in the amplifiers: it is mentioned here in order to place the projectionist on guard against snap judgments anent the cause of poor sound quality.

Cause of Intermodulation

Intermodulation is said to occur whenever a number of tones interact upon one another to produce additional, and spurious, tones not present in the sound record. When these are in harmonic relationship with the recorded tones they are scarcely noticed, but unfortunately, this is not always the case. When the spurious tones clash with the recorded tones, producing discords, they become extremely objec-

tionable. In fact, intermodulation is the principal cause of public dissatisfaction with the tone quality of cheaply manufactured radios and home phonographs. Once in a while intermodulated sound is recorded on film and disk, the trouble arising from electrical, photographic, and mechanical causes. Commercial disk records are notorious offenders. So also are certain makes of electric organ, wherein the purity of the individual tones is spoiled by intermodulation arising in the complicated electrical networks in the organ itself.

It is difficult to describe the effects produced by intermodulation. Imagine that you are listening to a musical recording in which a violin is playing. Assume that the tone of the violin is clear and natural. Now assume that a bass instrument of one sort or another begins to play along with the violin. The violin at that point becomes "gargly" and raspy. That is an example of intermodulation in its simplest form. Suppose that an entire orchestra is playing, the fundamental tones and harmonics of all the different instruments intermodulating, giving a bewildering number of spurious "sum and difference" frequencies! The result is sound that must be described as blurry, fuzzy, etc.

As the reader can readily appreciate, the peculiarity of intermodulation lies

in the fact that a *single* recorded tone is reproduced with perfect clarity, all other factors being satisfactory. It is only when *several* tones are sounded together in the recording that the reproduction becomes "clashy," "whiskery," mushy, etc.

Modern Amplifier Standards

Modern theatre amplifiers are so designed, now that degenerative feedback circuits are standard practice, that all distortion *except possible intermodulation* is kept under 2 per cent of the total power output. Accordingly, one make of theatre amplifier may give better sound than another make, even though both have the same low distortion-rating of 2 per cent or less. The reason is that intermodulation is ignored in these distortion-ratings. Measurement of intermodulation is a more complicated operation than the measurement of distortion products generated by a single test frequency.

More and more the manufacturers of high-quality theatre sound equipment are beginning to direct serious attention toward minimizing the intermodulation effects which the public finds very objectionable. At the present time perfect reproduction of a full symphony orchestra—reproduction so natural that it cannot be told from the real thing even by expert listeners—is rarely encountered.

[THE END]

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VARIETY

Top Grossers of 1952

Here are 1952's best, that is, all films which went into release during the calendar year which have, or will have, grossed \$1,000,000 and over in domestic distribution rentals (U. S. and Canada). Estimates are used, based on actual billings and playdates to date. Only pix excluded are those which went into distribution too late in the year or have played too few dates to make any reasonable determination of final gross business. Among these are Allied Artists' "Battle Zone," Columbia's "The Happy Time," United Artists' "Moulin Rouge" and "Limelight," RKO's "Hans Christian Andersen," Universal's "Against All Flags" and Metro's "Prisoner of Zenda."

1. Greatest Show on Earth	Technicolor	Par	\$12,800,000
2. Quo Vadis	Technicolor	M-G	10,500,000
3. Ivanhoe	Technicolor	M-G	7,000,000
4. Snows of Kilimanjaro	Technicolor	M-G	6,500,000
5. Sailor Beware	Technicolor	20th	4,300,000
6. African Queen	Technicolor	Par	4,000,000
7. Jumping Jacks	Technicolor	UA	4,000,000
8. High Noon	Technicolor	Par	3,400,000
9. Son of Paleface	Technicolor	UA	3,400,000
10. Singin' in the Rain	Technicolor	Par	3,300,000
11. With a Song in My Heart	Technicolor	M-G	3,250,000
12. Quiet Man	Technicolor	20th	3,200,000
13. Bend of the River	Technicolor	Rep	3,000,000
14. Plymouth Adventure	Technicolor	U	3,000,000
15. Stars & Stripes Forever	Technicolor	M-G	3,000,000
16. World in His Arms	Technicolor	20th	3,000,000
17. I'll See You in My Dreams	Technicolor	U	2,900,000
18. Iron Mistress	Technicolor	WB	2,900,000
19. Just for You	Technicolor	WB	2,900,000
20. Distant Drums	Technicolor	Par	2,850,000
21. Million Dollar Mermaid	Technicolor	WB	2,750,000
22. Room for One More	Technicolor	M-G	2,750,000
23. Scaramouche	Technicolor	WB	2,750,000
	Technicolor	M-G	2,750,000

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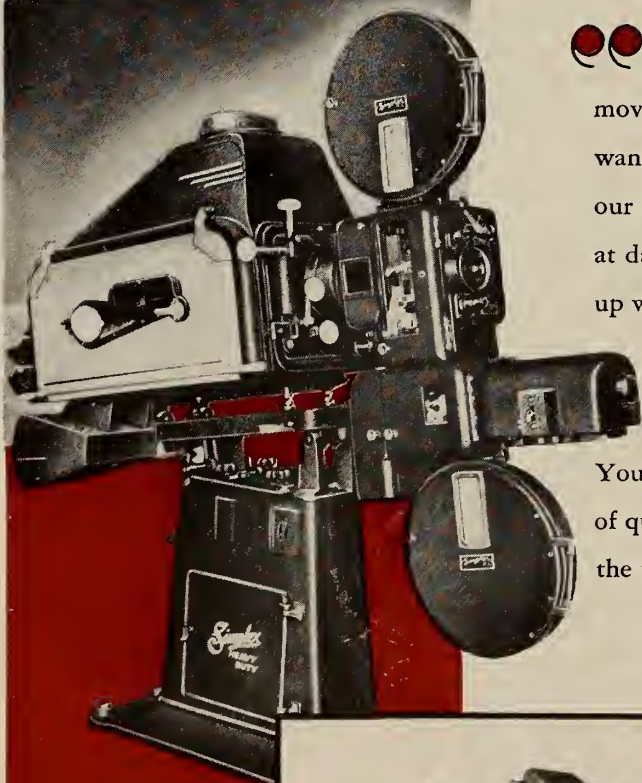
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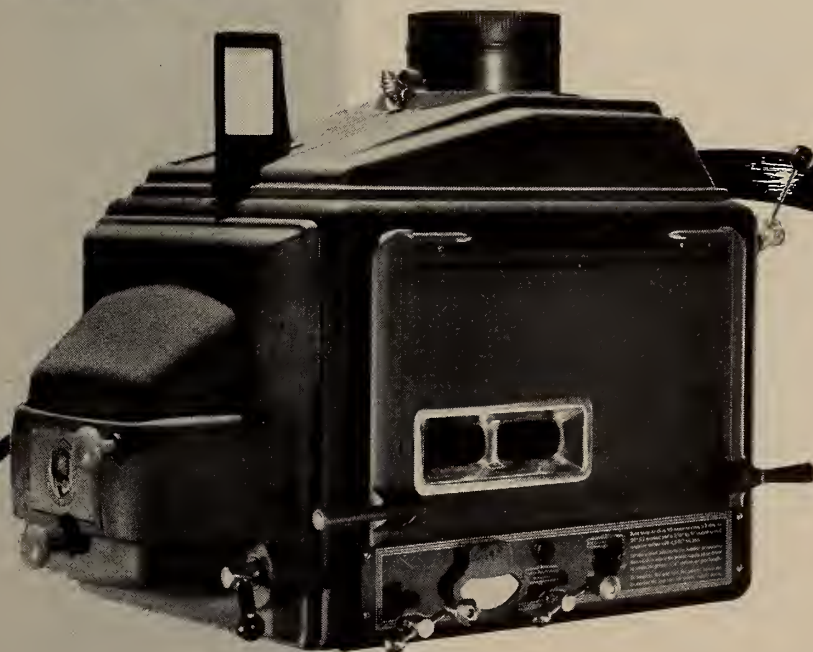


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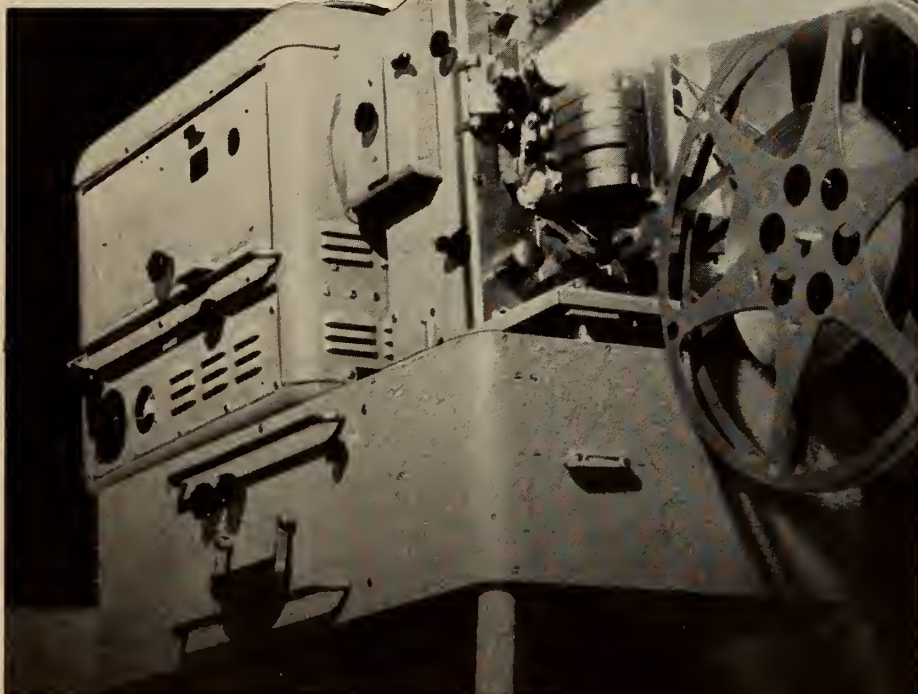
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JAMES J. FINN, Editor

MONTHLY CHAT

THE time has passed when any useful purpose can be served by flailing about and castigating the "leaders" of the motion picture business for their disgraceful inactivity in getting together and agreeing upon at least minimum technical standards anent the various new processes now being thrust upon the bewildered exhibitor. Not that IP goes along with the "wait-and-see" attitude so blandly displayed by the bosses in production and exhibition; far from it. But it's crystal clear that no amount of prodding will bestir these fellows—they're on their own and everybody else be damned.

IP feels that the best service it can render its readers during this transitory period is to chronicle as accurately as possible developments in the various 3-D, wide-screen, and the stereo sound processes.

20th Century-Fox finally took the wraps off its CinemaScope process for a large segment of the exhibition field, and the general public, via a series of showings at the Roxy Theatre in N. Y. City. The setup included the following: the now familiar Chretien anamorphoscope, a lens which compresses the image in production onto a 35-mm film and, subsequently, in projection, expands it to wide-screen proportions; a projection screen which in the Roxy was 65 feet wide by 25 feet high, and a special sound reproducing system which utilized three tracks on magnetic tape, with its special reproducer system, plus the conventional single track on the film itself.

It will be noted that this CinemaScope aspect ratio approximates 2.66 to 1, and 20th has announced that it will shoot its entire feature output with this ratio. Well, IP still doesn't like the image of a 14-foot long dame lounging on a pent-house terrace; and while it has previously expressed a preference for an aspect ratio of 2 to 1, it now frankly admits that the range between 1.66 and 1.85 to 1, the latter combo the top figure it would endorse, is probably the right size.

Picturewise, IP just can't buy the "rib-bon effect" of the CinemaScope proportions, and it is significant that there are already hints from 20th Fox quarters that the ratio will be shaved to at least 2 to 1. IP will bet that it will finally wind up around the 1.85 to 1 level.

As to width, IP thinks that a 65-foot screen is the veriest nonsense, and this view stems from the ill effects experienced after the showing as a result of the intense neck-swiveling required to take in

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Visibility Factors in Projection

I. Panorama Vs. Stereoscopy

MOST projectionists have yet to encounter the newer systems of visual projection. And because there are several panoramic (wide-screen) and stereoscopic (3-D) processes under extensive development, the future of theatre movies is regarded with a certain amount of bewilderment.

In the panoramic camp we have Cinerama and CinemaScope. The stereoscopic contenders include Natural Vision and Paravision, among others. Thanks to the competition provided by home Tv, the issue has become a life-or-death struggle. And the customer-pulling novelty value of all these processes has increased the fury of the fray.

Regardless of the technological warfare, the fact that the theatrical motion picture is primarily a *dramatic* medium should not be overlooked. When, about 40 years ago, people tired of watching trains speeding at them head-on from the screen, of the visual thrills of roller-coaster rides, of seeing unconnected scenes of the travelogue variety, the movies survived the palling of their novelty by drawing upon their then untapped resources as a dramatic medium. If motion pictures were not also *emotion* pictures, they could not survive.

Wide Screen Merely a Novelty?

The wide screen, represented by Cinerama, has enjoyed considerable suc-

By ROBERT A. MITCHELL

cess as a *visual* novelty, *all spectacle* and no *drama*. Is the wide screen capable of telling a story, of arousing the deeper emotions, of creating mood and "atmosphere"? We have our doubts, but we shall soon find out. CinemaScope, 20th-Fox's single-projector carbon copy of Cinerama's triple-projector system, will make its debut garbed sanctimoniously in "The Robe," a pseudo-religious narrative. Time will tell how effectively the wide, dimly-lighted CinemaScope screen translates this pious tale.

Advantages of Stereoscopy

Stereoscopy possesses obvious advantages as a medium of dramatic expression, however. Natural Vision 3-D is startling, despite its present mechanical limitations. Objects in a true 3-D picture can move about to and from the observer as well as from side to side and up and down. The distant hills in 3-D really look distant—miles behind the screen. Nearer objects actually look closer; and actors may come within arm's reach. Moreover, the director of a 3-D film can optically adjust distances to produce whatever effects he desires—within the limitations of a given lens setup.

Both Cinerama and CinemaScope, on the other hand, are as flat as a curved pancake. These processes are

not stereoscopic in any sense of the term. The curved screens which they utilize are an attempt to "surround" the audience with the projected scenery.

Unfortunately, however, viewing perspective and screen curvature do horrible things to the configuration and shape of objects in the picture. Straight lines appear bent, or bowed. Even the horizon-line in landscape shots either humps up to form a non-existent hill or else hollows in to form a vale into which one half expects precariously balanced rocks and trees to tumble. There is no getting away from these funny effects because certain optical requirements for good projection are violated by the curvature of the screen.

We expect that "The Robe" will suffer as an inevitable consequence thereof.

CinemaScope, nurtured at the breast of 3-D-hating Darryl Zanuck, utilizes standard 35-mm film and standard frames. The trick is turned by optical wizardry. Over the camera lens is placed a cylindrical lens that "compresses" a wide field into the regular aperture. The prints are made in the ordinary way; but when they are shown, an achromatic cylindrical lens is placed over the projector lens. Being turned to an angle of 90 degrees to the position of the camera cylindrical lens, this lens performs an *opposite*

function—it *expands* the *squeezed* film-photograph to wide-screen proportions.

Reflected Light Level

A difficulty arises. The CinemaScope screen has approximately three times the area of the regular screen. Screen illumination accordingly falls to 33% of normal. (Actually, it is less than this because the cylindrical lens wastes about 10 or 15% of the light.) New and more powerful lamps are required for CinemaScope showings; and lamps sufficiently powerful for good CinemaScope showings in medium-sized and large theatres do not exist; nor could the 35-mm film image accept so much light without damage. This light problem does not exist in Cinerama, which uses *three* projectors, each covering *one third* of the wide screen. But Cinerama is plagued by difficulties of a different nature.

What about the polarized-light 3-D process, such as Natural Vision? In its present stage of development, 3-D is a 2-film process requiring two projectors to run simultaneously and in synchronism. This is admittedly a makeshift which inevitably makes perfect superposition of the stereo pairs impossible because of minor film-weave and jump, slight differences in the focal lengths of the two projector lenses, and a condition of parallax created by the distance separating the two projectors.

Then too, Natural Vision takes us back to the day of between-reel intermissions. Will theatre patrons who wisely abstain from concession-counter abominations be willing to sit before a "dead" screen listening to worn-out juke-box records for a quarter of an hour once or twice during a show without longing to be home watching Tv?

Present Advantage—Future Grief?

We also wonder if moviegoers will consent to wearing the slightly dim and foggy Polaroid spectacles after the novelty of 3-D has worn off. And will the owners of wide theatres be willing to sacrifice side seats because aluminum screens, necessary to maintain the polarization of light, throw light forward, mirror-fashion, in a narrow angle?

These considerations have not yet been accorded exhaustive discussion by those most interested in polarized-light 3-D movies. Engineers are well aware of all these thorny problems, but promoters feel that these drawbacks may be ignored for the present. They know that the patronage-attracting value of a

spectacular novelty covers a multitude of technological sins—for a while. This attitude is a necessary one to adopt because it permits 3-D to be presented now.

Sound systems were far from perfect when first introduced; but when installed in theatres, bad as it was, and improved from time to time until it attained its present state of perfection. There are good reasons for thinking that 3-D will parallel the history of sound in its development, and that, eventually, the public will assent to the wearing of Polaroid glasses, a small price to pay for the added realism and vastly enlarged visual and dramatic scope of movie entertainment.

It is a pity that successive-field stereo films are not feasible—one frame for the right eye, the next for the left eye, the third for the right eye, etc. Single-film 3-D would eliminate a great many problems and cut equipment costs for the exhibitor; but extensive tests have amply demonstrated that successive-field 3-D is productive of eyestrain and such attendant ills as a sick-at-the-stomach feeling. Why, nobody knows; but it's a fact.

Panorama has made good use of stereosound. In fact, it may be said that stereosound is a necessity for all *wide-screen* projection, flat or curved. Illusion would be spoiled if all the sound emanated from the middle of the

3-D and Wide-Screen Combined

Universal has gone whole hog into the matter of utilizing the new techniques and is releasing a picture that combines Polaroid 3-D, panoramic wide-screen and stereophonic sound. A science-fiction thriller titled "It Came From Outer Space," the picture is having a dual premiere in the Los Angeles area May 27th.

Exact size of the screen has not been reported, but the aspect ratio is 1.85 to 1. A similar screen being installed at the Loew's State Theatre in New York City for another Universal production, "Thunder Bay," measures 46 by 24 feet and has a concave curvature of about 3 feet in depth. However, this picture will be shown wide-screen but without Polaroid 3-D.

Universal asserted that it has striven to design a more directional screen to assure the maximum of illumination for combining wide-screen and Polaroid 3-D in "It Came From Outer Space." It is constructed of textile sprayed with an aluminum solution. A light surround rather than masking of the screen is recommended for improved viewing.

screen. Cinerama's stereophonic sound, reproduced from multiple magnetic tracks, is O. K.

Old Tricks Revived

Stereoscopy, likewise, will be severely handicapped by the old-fashioned, horn-behind-the-middle-of-the-screen system. Projectionists need only bestir their memories to appreciate the fact that recent panoramic and stereoscopic stirrings in the cinematic cauldron are only modern versions of old tricks. Theatre Tv, now of uncertain future, is indeed something radically different; but in panorama and stereoscopy he will meet old friends in new guise.

As Cinerama has proved, the wide screen depends upon stereophonic, multi-directional sound for much of its spectacular effectiveness. Memory must needs turn back about 15 years to pinpoint the inception of stereosound.

Walt Disney's "Fantasia," with sound reproduced from multiple photographic soundtracks, amply demonstrated the superiority of stereosound even for the conventional screen. In fact, manufacturers were prepared to produce stereosound theatre equipment on a commercial basis by the time World War II broke out. Hollywood, however, procrastinated on the matter of standardization, adopting its usual "wait and see" attitude. Came America's participation in the war, the box-office boomed. That was that.

But now Tv is pre-eminent as a mass-entertainment medium, and motion-picture people, acutely feeling the pinch, are grasping at any straws which promise to keep their heads above water. Stereophonic sound now has better than an even chance of finding a home in the neighborhood theatre.

Panoramic Projection Old-Hat

Panoramic projection had grown a knee-length beard even before Grandeur's "Happy Days." Cinerama's new baby is really the same old boy, shaved and swaddled in curved-screen diapers. The memory of most of us may not go back to the Corbett-Fitzsimmons fight held in Carson City, Nevada, 1897, but it's a fact that this tussle was filmed and projected *via* special wide film having frames proportioned in the 1:2 ratio. And it "awed" the customers with its wide-angled realism!

The Rubin Magnascope (Harry Rubin, of Paramount) an auxiliary

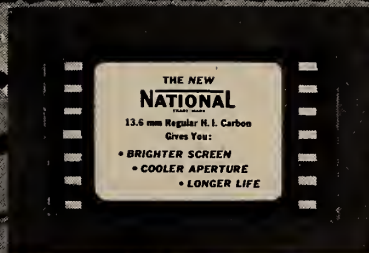
(Continued on page 30)

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The Drive-In Theatre Dissected

By WILBUR FLAHERTY

Secretary, IA Local 389, Fort Dodge, Iowa

HOW IT HAPPENED: Several contributions to IP by A. Buckley, of Yorkshire, England, sparked a regular correspondence between him and Wilbur Flaherty, whose folks hailed from Yorkshire. Recently, Mr. Buckley sought and obtained from Mr. Flaherty the accompanying paper on drive-in theatres, which was read before the Leeds Branch of the British Kinematograph Society. The British fellows loved it, we hear; and so did we.—ED.

LIKE most commercial ventures, the drive-in theatre came into being to make money for its sponsors. It appears to be a profitable melding of the great American urge to go somewhere while sitting down and also the urge to be entertained with the least possible effort.

To attain this state of happiness one must get in a car and drive out to the drive-in where the patrons witness the picture to the accompaniment of the crunching of popcorn, the gurgling of ginger beer, and the sound effects born of the desecration of hot dogs and mustard. In short, it is the projection of sound pictures under the stars. Americans cannot do the simplest things unless food is consumed simultaneously. But, it does make the dollars roll into the cash register.

Location of Vital Import

With this as a premise, we must give first consideration to the location of the drive-in theatre. Most favored spots are those near the edge of the city. Accessibility to the city patronage and the rural are equally important. The location should be *near* but *not on* a main highway. This insures a minimum of traffic congestion while filling and emptying the theatre. Location is extremely important.

Of equal importance is the matter of grading the grounds, drainage, cost of land, *etc.* The cost of grading, preparing the ramps, and provision for drainage of run-off water are serious items to the prospective builder. The ramp is that specially shaped and prepared area wherein the auto is parked while its occupants watch the show. The ramps are arcs of concentric circles

whose center is the screen or screen tower. The service loop allows space for cars to accumulate while waiting for vacant ramp space, similar to standing room in conventional theatre.

Since considerable grading is necessary and the cost of earth-moving is about 30¢ a cubic yard, it is apparent why the prospective builder searches for a site which will require the least expenditure and still be in an area which will draw the cash customers.

Factors Affecting Type

The size, or car-holding capacity, of a drive-in, depends on the estimated revenue. Under this heading can be lumped the population of the adjacent city, the expected rural patronage, location, the strata of society one expects as patrons, and competition from other drive-ins either actual or worried about.

A homemade drive-in wherein the owner does much of the construction work may be built for around \$20,000. This is the bare bones with little in the way of big time accoutrements. One might say it consists of a cash register, a screen and projector, lots of gently rolling hillside plus a great hope in the future. Strangely enough, many of these low-cost theatres have proved very profitable.

On the other hand, there are the super-de luxe jobs with baby sitters and children's playgrounds in the greensward just before the screen. One theatre in Florida is reputed to have a choice of either warm or refrigerated air available to be blown into each car along with the sound. Of

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THE
AUTHOR:
WILBUR
FLAHERTY



who joined the IA in 1928 at the age of 18. He served with the U. S. Signal Corps during World War II, holds a first-class commercial radiotelephone license, has worked at AM and FM radio broadcasting and at maintaining mobile two-way radio systems for taxi companies—this, in addition to his Union duties and his job as a projectionist. "Outside of the aforementioned," says Flaherty, "my time is my own."

course, the admission prices will advance according to the luxury of the layout and the class of customers.

Size, Clientele, Prices

A typical small drive-in of 300- to 400-car capacity will charge about 50¢ for each adult in the car, and children free, or will make a flat rate for each car regardless of occupants. A good share of income is derived from the sale of food, drink, *etc.*

The class of expected customers has somewhat to do with the money expended and the admission charged. If location is near a district of predominantly lower income groups, the refinements in the theatre are little and the admission low. If located in the summer resort area where the customers are vacationists with an urge for one last fling before extinction, the trappings are more gaudy and the prices higher.

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Free, Easy Atmosphere

To recap, we might say that the primary attraction of the drive-in is its free and easy atmosphere. Certainly the customers do not come just to see second-and third-run pictures. Mainly it is the desire to keep Mother and the children occupied for one more evening.

Father comes home from work or in from the fields and after supper loads the family into the car and heads for the drive-in. Father still wears his work clothes. Mother is still nursing the baby, and the other children are merely normal kids seeing a movie under a different guise. In America every man's home is his castle and every man's car is an extension of that precept. Television is rapidly changing that somewhat.

Earlier we mentioned the refreshment situation. Usually the building which houses the projection facilities also contains the concessions, which is Americanese for "eating something" while having a good time. With taxes, ever-increasing overhead and all, it seems that the American exhibitor must have a supplementary source of income, and with this arose the conception that people come to the movies *not* to see the movies but to eat. So, prominent in the design of drive-ins is the concession stand. When one considers that about 30 to 50% of the income of a drive-in comes from the concession stand it is easy to see why the concession building is important.

The concession dispenses candy, pop (ginger beer), popcorn, hot dogs, ice cream, *etc.* This translated into reality means a small projection room and a large concession stand. One of the end results is that the projection room operates at an ambient temperature that is not mentioned in polite society, plus a multitude of insects attracted by the bright lights. We have all heard of the moth singed by the flame, and that applies to the projectionists in a drive-in.

Individual Car Speakers

The drive-in is fundamentally a motion picture theatre moved outdoors and wherein the sound is piped to each auto with a volume control on each car speaker so that the listener-viewer can regulate conditions to suit himself. It



Typical drive-in screen mounting.

sounds simple, but with screens 40 feet wide and 150 feet away, with 100 to 500 watts audio power spread among 300 to 900 speakers, and various other ailments, the lot of the projectionist is not always too easy. But projectionists are a hardy lot in any land.

After a particular piece of land has been approved for construction, the next question, depending on the slope or on the "levelness" of the land, is the

type of ramp to be used. Several types have been used. One of these has either the front or hind wheels of the car setting in a shallow ditch to give the desired slant toward the screen. This method has the advantage of lower first cost but its application is limited and has the added disadvantage of difficulty in entering and leaving the ramp. The other and most used type of ramp can be compared to a series of concentric waves in the ground radiating out from the screen.

Alignment of Ramps

The purpose of the ramp is to tilt the auto so that the screen can be viewed by the occupants while sitting in the same position as when normally driving along a road. Since the center line of the screen is 35 to 65 feet above ground level, it is necessary to slant the entire auto toward the screen center.

Since each arc of ramps is progressively farther from the screen, the angle of tilt on each ramp will become progressively less as the distance from the screen increases. With this comes the necessity of providing an unrestricted

(Continued on page 25)

Projected Light & the Curved Screen

A GOOD projection lens is designed to form an image on a plane surface. The light rays contributing to the formation of *each point* on such image (*italics ours—Ed.*) emerge from the aperture of the projection lens, 2 inches or so in diameter, and 100 feet or more away. The cone of light thus formed has a very small included angle and, in consequence, a displacement of the screen a few inches from its theoretical plane surface would have little or no visible effect upon the image quality.

A sufficiently concave screen would have some effect upon the distortion of the screen image when viewed from a position to the extreme right or left of the theatre. Figures on the far side of the screen from the observer would appear somewhat less distorted, since the viewing angle would be less acute; those on the near side would appear *more distorted* (*italics ours*); and those in the center would remain unchanged. Whether these results would be of advantage to the audience we cannot say.

Very much open to question in our mind, however, is the statement that a screen composed of two layers would add anything to the illusion of depth in the projected image, or that this arrangement would polarize the image or eliminate glare; but we are willing to be shown.

This matter of curved surfaces would need, and seems worthy of, much more thorough investigation and some tangible information if one is to properly evaluate its worth or lack of it. Thus far the proponents of such screens have offered nothing that would provide the basis for such scientific appraisal.

It appears that the manufacturers of such screens consider each installation as an individual problem and that each screen must be specially designed on the basis of width of theatre, screen size and length of throw. An analysis of a typical situation of this sort and of the method whereby the curvature of the screen is computed would be of considerable interest and a most worthy contribution to the literature of the art.

The 'New' Cooling Systems

By CHARLES A. HAHN

J. E. McAuley Mfg. Co., Chicago, Illinois

VARIOUS articles appearing in the trade press concerning cooling methods for the projection apparatus, including all components, tend to mislead the non-technical personnel of the industry. These "new" systems are a source of wonderment to the writer.

First of all, let us analyze the various components and see just exactly what has been "invented." *Keep the following facts in mind:*

1. As is generally known to the trade, we in our Peerless Hy-Lumen Heat Glass Absorbing Filter have been using a blower and air blast for cooling the heat filter medium.

So, there is no invention or anything new involved in this respect.

2. Dichroic filters, otherwise referred to as heat-reflective coatings, have been known to the optical world for the past 8 or 10 years. I believe the Bausch & Lomb Optical Co., as well as Fisch-Schurman, have been selling such coated glass circles for the past 4 or 5 years.

So, there is likewise no invention here.

Angular Mounting

The only thing now left is the method of angular mounting of the glass with the dichroic coating in the optical

axis of the projector. According to this, we "invent" an "angle." I think that all projectionists are aware that angles were invented long before anyone now here was alive.

My further comments are that the claimed percentages of visible light transmission of a dichroic-type filter is rather exaggerated at only a 5% to 6% loss. Generally, such transmission determinations are made by laboratories of dichroic filter manufacturers who employ infrared electric bulbs as the source. This, of course, is just the kind of illumination source that is *not* used when projecting motion pictures.

We believe that when making comparison of dichroic-type heat filters to heat-absorbing glass filters, the first step is to expose each that is to be tested for relative efficiency to 60 hours of actual usage *under projection room conditions*. This, we think, is an absolute *must* if we are not to kid ourselves when making a decision.

Absorption vs. Reflection

One manufacturer states: "However, none of these systems" (air-blast and heat-absorbing glass) "have been accepted as the ultimate answer to the heat problem." Also, "Heat-absorbing glass does not seem to be the answer by

any means, as a light loss is almost equal to the heat loss."

Both of these statements are false, having no basis in fact. In our development work of over 12 years, we have at some time done exactly what is now heralded as "new."

We prefer the heat-absorbing glass to the heat-reflecting dichroic type for the very good reason that the dichroic coatings have a high degree of fragility and are extremely sensitive to overheating. When overheating has been experienced, their effectiveness is annihilated; after which it even follows that the burned coatings only allow 40% to 50% of the visible light to be transmitted.

Phosphate heat-absorbing glass has no such qualities, and, if kept clean, their light transmission is practically a constant factor.

Insulators Sometimes Conductors

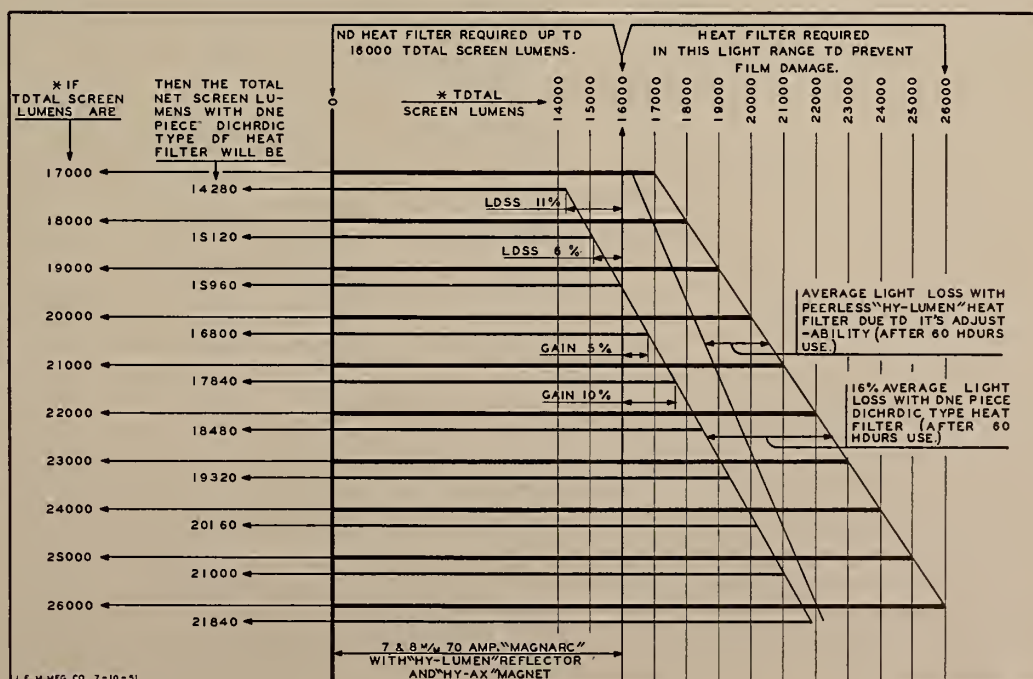
An interesting aspect of electrical insulators is the fact that under certain conditions they will conduct electricity even though they are by definition non-conductors.

Comparatively large currents can be produced in certain insulators by bombarding them with high-speed particles of atomic size. The particles liberate charge carriers within the insulator, and these may move if an electric field be applied.

The action of solid-state devices, such as varistors, or transistors, depends on electrical conduction through non-metallic solids. Conductivity induced by bombardment is one of the tools at the disposal of scientists for measuring the behavior and improving on such devices as the transistor.—BELL TELEPHONE LABS.

HEAT-FILTER LIGHT LOSSES

Obtained using an F:2.0 coated projection lens—without projector shutter, or porthole glass, or # G-292-E Pyrex air deflector. No allowance has been made for metal reflector losses or for water-contact cooling devices when used with carbons *not* designed for such operation.



Addendum: 3-D Projection

By MOTION PICTURE RESEARCH COUNCIL

IN LINE with IP's policy of disseminating all shades of opinion anent the various "new" production and projection processes, we present herewith an addendum to the report by the Research Council which appeared in IP for March last (page 12). Properly, these data should refer to and be considered as a supplement to the aforementioned article.

Projector Filters

The purpose of the projection filters and audience viewing glasses is to permit the left picture to be seen only with the left eye and the right picture with the right eye. If the projector filters are not properly set over the port, some of the left picture will be seen by the right eye, or vice versa, and this causes a ghost, or double image, to be seen by the audience.

Where plastic filters are furnished, the manufacturer recommends cooling the filter. **NEVER PROJECT WHITE LIGHT THROUGH THESE FILTERS—IT WILL RUIN THEM.**

Another precaution—the filter should be perpendicular to the lens or the filter may affect focus. In other words, if you have a projection angle, the filter should not hang vertically, but the bottom of the filter should be slanted out from the booth wall to match the angle of the projector.

Screen Brightness

The normal "matte-surface" screen cannot be used with 3-D pictures because it depolarizes and "ghosts"—that is, both eyes would see both pictures. A metallized screen must be used. Aluminum is preferred because it reflects all colors equally so that the color balance of the print is not changed in projection.

The brightness of the 3-D picture, using two filtered projectors and a directional screen, is *less* than the brightness of a regular picture using one machine. Therefore, every means of getting the maximum amount of light from the equipment must be utilized.

The proper size carbons should be used at their rated voltage and current. The mirror or condenser in the lamp house should not be pitted or discolored. Projector lenses should be the fastest obtainable. Care should be taken to properly adjust the arc with respect to the optical system so that the light path is in perfect alignment.

Shutters should be properly adjusted for maximum opening without travel ghost. Port hole glass should be inspected to see that it is of good quality and without scratches or discoloration.

The light output from the two projectors should be balanced.

Projection Procedure

The two projectors must be aligned so that their vertical and horizontal center lines are superimposed on the screen. The Motion Picture Research Council has prepared target test film for aligning projectors. This same target test film is used for aligning projectors for both 3-D pictures and regular pictures.

Because of differences in photographic techniques, either the left print or the right print, or both, may be projected emulsion-toward-the-light or emulsion toward-the-lens in 3-D films. The sound track will be on the proper edge of the film.

If the optical axis of either lens is not correctly centered, reversing the emulsion position and refocusing will cause a horizontal shift of the picture on the screen. Therefore, to be certain of proper alignment, the test loops should be threaded with the emulsion in the same position as it is on the prints to be projected.

When the alignment film loop is projected nonstandard (that is, emulsion-toward-the-lens), it must also be reversed—that is, run backward so that

Motiograph's Stereo Sound

Motiograph, Inc., announced the early availability of two models of stereophonic sound systems, one for theatres of 1,600 seats or less, and another for larger theatres. The equipment contains a magnetic reproducer capable of reproducing the sound from films containing three magnetic sound tracks. When electrically interlocked with the existing theatre sound system, sound will be reproduced through three separate loud speaker systems, and a number of auditorium speakers.

Speaker equipment consists of three Altec Lansing loudspeaker systems and from 10 to 15 high-quality auditorium speakers. The two systems vary only in the amount of power output of the three power amplifiers and the size of the loudspeaker systems. First deliveries are to be made in late June. Orders may be placed now with Motiograph dealers.

the sound track will be in the proper position. In this case the test target will be upside down, but this is satisfactory as the loops can be used either way.

Testing Alignment

The alignment of the projectors should be checked frequently as vibration may cause the projectors to get out of alignment. Always re-align for a 3-D feature which does not have the same emulsion positions as the previous picture.

When threading up, it is extremely important that both machines are threaded exactly in synchronization. Should either machine get even one frame ahead of or behind the other machine, the action on the screen will be blurred.

One of the prints will be marked to designate which of the two is to be used as the sound print. As explained above, some prints will be projected in the standard manner, some will not. Where the print is projected standard, the sound optical system will be in focus. Where the print is projected emulsion-toward-the-lens, or non-standard, normally the high frequency tones would be deficient. However, the studio sound department will equalize for this high frequency loss. *Do not re-adjust the optical system.*

Tests During Projection

As soon as the main title comes on, look at it *without the 3-D glasses* so you can see both pictures. Slowly frame the left machine so that the title words line up along the top edge of the letters. Only the left machine should be framed. The framing must be done with extreme care and *very slowly*.

If the main title seems to be out of horizontal alignment, *don't change it*; the whole 3-D effect depends upon parts of the picture being slightly separated on the screen.

During the main title the focus should be checked, because the picture print may be of a different thickness or projected nonstandard compared to the test film. The left eye will then see only the picture from the left machine and it can be focused.

When focusing the right machine, cover the left eye. Sharp focus is quite important because if one machine is a little out of focus it will make the audience feel like one side of their glasses has a smudge on it.

Special projectionists' glasses are now available as an aid in focusing. Two pairs are used in each booth. One pair has both right eye filters for focusing the right machine, the other has two left eye filters for focusing the left machine.

During projection it is possible for one projector or for one print to get a little out of alignment vertically. The picture

should be viewed frequently without the 3-D glasses to check vertical alignment.

Out-of-Frame Conditions

For various reasons it is possible for either picture to get one or more frames out of sync with the other picture. When this happens, it shows up on the screen by affecting objects in motion. With 3-D glasses, watch the picture and look at anything moving, such as a person's lips as they talk, or one's arm as they walk. If the two pictures are out of sync, the objects in motion have an odd effect as if they were drifting apart.

To check synchronization of the prints, footage numbers on each side of each splice in both prints should be checked

to determine if both prints contain an exactly equal number of frames.

In case of a film break, pick out two identical footage numbers (both prints will be identically numbered every foot along the edge of the entire print) and mark this position on each print with a marking pencil or small piece of white tape. Use these marks as start marks and rethread.

After projection, the broken print should be repaired by adding black frame line leader to replace the missing frames. For example, if four frames are destroyed, insert six frames of black frame line leader. Six frames are needed because two more frames are destroyed in making the splice.

To Trim or Not To Trim

In the last issue of IP (April, p. 14) in LETTERS TO THE EDITOR, there appeared the comment immediately following from a Canadian friend. Discussion thereof is appended.

The Wenzel projectors as first received here had the conventional rear 90° shutter blade installed. Using a piece of fibre as a test blade. I found it possible to cut 1¼" off each corner of the outer edge of the shutter to a point toward the hub corner of the blades. Titles and pictures are sharp, as with the full 90° blade, with no visible trace of travel-ghost or trembling, despite what Robert Mitchell says (IP for September 1952). In my opinion, a very small amount of "ghosting" is permissible without being noticeable to the audience.

The arclamps in use here are the usual high-intensity, with Strong 14-inch reflectors, two separate carbon-feed motors, each with its own rheostat. The lamps are intended for use with the usual 6-mm

negative and 7-mm positive carbons. Jaws of the negative carbon holder can hold a 7-mm carbon as easily as a 6-mm; and it was found that a 7-mm carbon in the negative side in place of the 6-mm not only gave a slightly brighter screen, but the two 7-mm carbons gave a steadier light with less critical carbon position setting.

Also, carbon consumption dropped considerably. Carbon consumption for a 2000-ft. reel is ½" of negative and 1½" of positive. These figures can be vouched for by brother projectionists. Lamp voltage is 27 at 40 amperes. Carbons used are National Suprex.

K. C. BRIDGES

P. O. Box 25, Exeter, Ont., Canada

MR. BRIDGES watches the picture exclusively from the projection room; but R. A. Mitchell probably checks projection quality once a week by watching the picture from the stage while an assistant runs off two reels. Most projector manufacturers, like Mr. Bridges, permit a "small amount of ghosting," thinking that it has no adverse effect on picture quality—but we old-timers know better.

When all "ghost" has been removed by increasing the width of the shutter blades, the complete disappearance of all trembling of bright objects (visible from the front rows) and all flicker, due to slight unavoidable backlash in the shutter gears, and of all flaring (which looks like a slight out-of-focus haze on the tops and bottoms of white letters in titles) leaves no doubt about improved picture quality.

Viewing Distance Important

When Mr. Bridges can project a plain black-and-white title and have it appear exactly the same as a projected

motionless slide, so much the same that it would be impossible to detect any differences, then he will find that his shutter blades are wider than he thought. It should be understood that I am referring to a picture viewed from the auditorium no farther back than the center. After all, "travel-ghost" sufficiently pronounced to annoy practically all patrons in the audience, may be invisible to the projectionist in the projection room, who is viewing the picture through glass ports.

In a different light, what does Mr. Bridges think that he gains by slightly trimming the blades? An increase in light? Not unless he can increase the light by more than 5%, the smallest increase detectable to the eye.

Perhaps you should publish a warning to projectionists who itch to trim shutter blades, as follows: Don't invite trouble by being fancy-free with the tin-snips.

Suggested Test Procedure

When using a test shutter made of sheet metal or fibre material, run plain black-and-white titles, remove the glass

from the observation port, and examine the image for tremble, flare, haze and "ghost." The front of the auditorium is the best observation post. If any trace of haze, flare, or "ghost" shows on the tops and bottoms of the white letters, the blades are too narrow.

Test again, using wide blades. Condition the eyesight to detect trembling of the tops and bottoms of the letters by first looking directly at an ordinary 100-watt light bulb turned on. This will temporarily reduce persistence of vision. Cut the projector shutter to match exactly the satisfactory test shutter.

Every precaution should be taken to have both the master and cutoff blades exactly the same width. Even as little as 1/32-inch difference in the average width of the two blades will introduce 24-cycle flicker—the greater the difference in the size of the two blades, the stronger the flicker. An untrained projectionist is not competent to tamper with the shutter.

I trust that Mr. Bridges is not like the projectionist who once removed the shutters entirely from his projectors and tried to convince me that the picture was much clearer and brighter without them. He couldn't tell travel-ghost from dirt on the port glasses—or on the lenses. In fact, he thought that if one goosed a "travel-ghost" one got a handful of sheet.

VERITAS

VALHALLA, U. S. A.

The Vanishing Documentary

Almost unnoticed amid the furor over what to do about television and ballyhoo surrounding 3-D films, the documentary film has been slowly dying. Only a few years ago, March of Time and This is America series were often booked in as many as 11,000 of the nation's 17,000 to 18,000 theatres. Now both are gone and surviving documentaries are unlikely to run in more than 4,000 theatres, according to a recent survey by the *New York Times*.

The interest and excitement that the expanding fact-film market inspired in the 1930's and especially in the war years, when the big boom was on, are no more. The brave disciples of such arty documentary makers as the late Robert Flaherty are lonely and scattered to the winds, or to be more exact, working for TV studios and video film makers.

The reasons for the decline of the documentary are complicated. Exhibitors and distributors claim that the double feature takes too much time to leave any room for documentaries. They also state that the trend is only a reflection of public demand. Audience interest in fact films is said to be generally very low. Of course, television is also blamed because networks carry many pictorial-journalism shows.

IN THE SPOTLIGHT

THE trouble with most of us is that we miss our friends most keenly in the abstract—usually when they are gone. The speeches, the nods, the genuflections, and the civil courtesies extended to the living as a matter of form somehow seem to be erased at the moment of death.

We should feel badly if we did not record in this space the death of former Senator Robert F. Wagner, of New York, on May 4. His contributions to the welfare of the common man are woefully served by these few lines.

- For the past year many conferences were held between the New York City Department of Commerce and the various labor organizations interested in the motion picture and television production center planned for N. Y. City. The proposed center, tentatively named Tele City, is expected to occupy a 250-acre tract and cost an estimated \$100 million or more. An understanding, designed to eliminate any jurisdictional problems that might arise, is sought with the interested labor unions.

- More than 225 people attended the recent dinner-dance held by the B. C. Projectionists Credit Union, an organization of members of Vancouver Local 348. The affair, the first of its kind for the Credit Union, was in charge of Local 348 members Denny Brewer, Ray Lowdon, Donn Foli, Geo. Wardrop, and Fred Hirtle, who did a magnificent job in providing the guests with a delightful evening's entertainment.

- *Out-of-Town Visitors to the Offices of IP:* Len Humphries, member of Toronto Local 173. Humphries was hospitalized for several weeks and his visit to N. Y. was in the nature of a celebration of his complete recovery.

- Clyde Cooley, secretary for Local 343, Omaha, Nebr., is kept pretty busy these days jumping from one part of the country to another attending the various industry conventions. Following his attendance at the recent SMPTE Convention in Los Angeles, he plans to

take in the Variety Club meeting in Mexico City, May 18-21.

- R. K. ("Red") Lewis, business representative for Local 84, Hartford, Conn., was named executive board member of the Hartford Central Labor Union.

- Hugh Sedgwick, 8th IA vice-president and former business representative for Local 303, Hamilton, Ont., reports excellent progress in combatting NABET's hold on Canadian Tv technicians. Back in 1949 the Alliance announced its intention to organize Canadian Tv, but the protracted illness of the late William P. Covert, IA vice-president in charge of the drive, impeded progress. Matters were more or less at a standstill until Sedgwick's appointment to succeed Covert, who died in January 1952.

For the past year Sedgwick has devoted most of his time to winning over to the IA the programming personnel in Tv studios. Although NABET made considerable headway in organizing the Tv technicians during the period of IA inactivity, the IA has recently applied for certification to represent Tv engineers in radio stations in several cities. It is confidently believed

BUFFALO BISON WITH EQUINE PAL



Elmer C. Winegar, treasurer of Buffalo Local 233, patting the nose of one of the beautiful horses in the recent annual Shrine circus parade. Winegar served as director general of the event.

that from here on in the Alliance will make rapid strides in regaining lost ground.

- Because San Francisco Local 162 insisted that the management of the Coliseum Theatre, where the 3-D picture "Bwana Devil" was scheduled to be reshowed, pay the projectionists for the extra time involved in preparing the show, the picture was withdrawn. Local 162 contends that the extra services performed by the projectionists before each showing of a 3-D feature calls for extra compensation—in this particular instance an hour overtime pay.

- Laboratory technicians employed by the Jam Handy Organization in Detroit, Mich., were granted a 10c per hour pay increase on the basis of the cost-of-living contract with LT Local 737.

- Testifying before the Senate Committee on Labor and Public Welfare on the Taft-Hartley Act, IA Representative Roy Brewer stated that the Communist infiltration of motion picture unions was overcome by the combined efforts of the various AFL unions involved. Brewer appeared before the Committee together with Walter Pidgeon, president of the Screen Actors Guild, and Jack Daley, Jr., Guild secretary, who voiced their objections to the loophole in the T-H Act in which 30 days is set as the period during which an employee must join the union where a union shop is in operation.

Pidgeon suggested that, since many pictures are completed within a few weeks, or even days, the 30-day period in the Act be reduced to 7 days. It was pointed out that the Act as it now stands permits hundreds of non-professionals, who have no intention of making acting their profession, to take jobs away from professionals, many of whom are "bit" players earning less than \$5,000 a year. Brewer was in complete accord with this suggestion and also recommended amending the union security feature of the Act to "permit unions to enter into preference of employment agreements in connection with hiring hall or union dispatching arrangements."

- The N. Y. State Assoc. of Motion Picture Projectionists held its annual Spring meeting at Frank's Tavern, Middletown, N. Y., on the 11th of this month. Middletown Local 311 went all

All This & Texas, Too

"The enclosed check for \$266, which covers the renewal subscription for our entire membership, is tangible evidence of Local 279's continuing support of IP. We feel that this gesture is small enough recompense for the benefits our members derive from the excellent technical articles which appear regularly in IP."

E. J. MILLER

IA Representative; Houston

L. 279, Business Representative

out in providing entertainment for the visiting delegates and their guests. A buffet supper wound up the afternoon's business session, followed later by a midnight banquet. This was the first Association meeting in Middletown and it is one that will long be remembered as one of the most outstanding and successful meetings, technically speaking, ever held by the organization. Details of the meeting will be discussed in our next issue.

- Our attention was directed recently to the activities of Joseph Cohan, member of Boston Local 182, who spends a great deal of his own time in helping to lighten the burden of his less fortunate fellowmen. For some time now he has been in charge of the weekly movie shows for the inmates of the House of Correction on Deer Island (in Boston harbor). As a direct result of Cohan's appeal for donations to the Red Cross blood bank, the prisoners recently voluntarily donated about 300 pints of blood. This is an achievement of which he is justly proud.

- Burglars had a field day when they cracked open the safe in the offices of Local 170, Kansas City, Mo., and made off with about \$1,000 of the Local's funds.

- Labor's League for Political Education 1953 drive for voluntary contributions of \$1 from each AFL member has begun and all union members are urged to take part in this nationwide movement. These contributions help labor fight the various anti-union legislative measures that are introduced from time to time. Tougher labor-management laws have already been passed in several states, and a number of Congressmen have expressed their determination to tighten the Taft-Hartley Act.

- The controversy between Local 202, Waterloo, Iowa and the management of the Paramount Theatre involving wages for the projectionists running the 3-D feature, "Bwana Devil," was settled with the granting of a 10% increase.

- Senate Bill No. 422, calling for an increase in license fees for motion picture projectionists, was introduced last month in the Pennsylvania State Legislature.

Anent Shutter Blades

The basic reason we have a shutter on projectors is to cut off light during the time the film is moving past the aperture. Without a shutter, the image on the screen would be afflicted with "travel-ghost" and the image would be streaky because we would actually see the film move on the screen. To avoid "travel-ghost", only one blade is needed on a shutter. This blade is called the "master."

However, a shutter with only one blade would cause a problem. There would be a strong flicker effect because the eye would detect the light-dark periods on the screen in the same way that we detect differences in the light intensity when we watch an electric bulb connected to a 25-cycle current.

Light-Dark Frequency

In order to eliminate flicker, we have to increase the number of light-dark periods per second. An action of about 50 cycles a second will produce a smooth (flickerless) picture at the average theatre light intensity. To accomplish this, more than one blade is needed in the shutter.

In the silent days, projectors ran as slow as 60 feet per minute, or 16 frames per second. At that speed, 3 blades were necessary. With a 3-bladed shutter, we have 48 light-dark periods per second ($3 \times 16 = 48$).

But since sound projectors have been standardized to run at 90 feet per minute or 24 frames per second, the 2-bladed shutter accomplishes the same thing, 48 light-dark periods per second ($2 \times 24 = 48$). Therefore, all sound projectors now have a 2-bladed shutter.

SAM GLAUBER

Paramount Theatre, N. C. City

IA ELECTION

LOCAL 433, ROCK ISLAND, ILL.

Edward A. Short, *pres.*; Richard T. Murphy, *vice-pres.*; Geo. A. Stoddard, *rec. sec.*; Kenneth L. Benedict, *fin. sec.*; Lloyd Burns, *treas.*; Fred R. Parker, *bus. rep.* and *member of exec. board.* Trustees elected are Clifford L. Harder, 3 years; Frank A. Berry, 2 years, and Kenneth L. Horton, 1 year.

HERBERT GRIFFIN

HERB GRIFFIN passed away on May 6, at Santa Monica, Calif., aged 66, following recurrent heart attacks. These are the dismal facts concerning a personality who for 45 years contributed so much to the development of the visual-sound projection art. At his death he was vice-president and a director of International Projector Corp.

Born in London, England, in 1887, Griff was educated there and in the U.S., following which he was associated with



Herbert

Griffin

several engineering firms. The comparatively new art of motion pictures early claimed his attention, and in 1915 he joined Nicholas Power Co., makers of projectors which are hailed today by old-timers as a superlative mechanism.

Inherent restlessness overtook Griff in 1916, so he accepted the post of director of motion picture activities for the joint effort of the AEF-YMCA and thereby wound up in Siberia—not as an internee. Griff returned to Nicholas Power in 1919 as director of sales and engineering, and continued on in the same capacity when the firm was merged with International Projector Corp., makers of Simplex projectors.

Griff was virtually Mr. Simplex during the ensuing years until 1936, when he was elected a vice-president and director of the firm, after which he served in many and varied capacities for the parent organization, General Precision Equipment.

Griff's professional and fraternal associations were many, and here will be mentioned only a few: charter member of IA Local 306, N. Y. City; chairman, projection committee, Projection Advisory Council; member, Academy of M. P. Arts & Sciences; member, Veterans of Foreign Wars; president, SMPE 1943-44; president, Librascope Corp., Burbank, Calif., and, as previously mentioned, v-p and director of International Projector Corp.

He who initials these few words will say only that as a "technical bum" he was nurtured in the art and craft of projection by Griff, and that he has his thousands of counterparts all over the world who have profited by Griff's teaching for more than 25 years. Griff enriched the art and the craft, but so great were his contributions thereto that one is constrained to utter only an humble "thanks" and God-speed.—J. J. F.

Vital Need for 3-D Standardization

Emphasized at SMPTE Gathering

INDUSTRY-WIDE standards for the new motion picture techniques were seen as a vital need by Mitchell Wolfson, prominent Florida exhibitor and former president of the Theatre Owners of America, when he addressed the semi-annual convention of the Society of Motion Picture and Television Engineers which ended in Los Angeles early this month.

Mr. Wolfson warned his audience that the industry may tear itself apart if it tries to "fly off in all directions at once" in its rush to embrace new methods of creating realism. There may be some who are "egging you on with the 'hurry-y-y, hurry-y-y, hurry-y-y' of the circus barker," he declared, "but the industry must take time to separate fact from fancy and the workable from the unworkable.

"Our heads are spinning with the varied formulae being hurled at us," he said. "We hear of screen proportions of 4 by 3, 5 by 3, and 8 by 3. We invite engineers to survey our theatres and tell us just what we need, and they tell us they wouldn't know what to survey if they came. They advise us to insist on standards. We cannot afford to, nor will we, change our projection room equipment and our screen every time we start the run of a new motion picture."

What Industry Needs

Mr. Wolfson charged the technical leaders of the industry with the responsibility for four specific undertakings:

(1) Standardization; (2) an improved light source; (3) a "compatible" screen for 3-D, panoramic, and conventional pictures; and (4) an educational program to insure the most effective use of new developments.

"After standardization, and I want to put special emphasis on those words," he said, "our problems seem to come in this order:

"First, we need an improved light source: greater and more even brilliance coupled with either an adequate cooling apparatus or film gates and film that can endure the higher temperature without harm. And an important part of this improved light source is a

power supply of sufficient capacity and reliability.

"Second, we need a not-too-costly screen with a picture surface which will be compatible with both the new pictures and films as we now know them. This screen must have the further qualifications of being suited to the structural limitations of most existing theatres. Of course, all these visual improvements must be accompanied by stereophonic sound at a *reasonable cost*.

"Third, you who create must also educate. When you have accomplished standardization, adequate light and power, and suitable screens and sound, then you must embark on a widespread but simply worded educational program so that these things to which you have given so much of yourselves will not suffer through misuse."

Drive-in Problems

Mr. Wolfson also commented on drive-in problems. New viewing techniques are not "as immediately important" for them as they are for indoor theatres, he stated. Two things of a technical nature that they do need, he continued, are an improved light source and further development of rear projection which might permit shows to begin earlier in the evening and perhaps solve other problems. The trend in drive-ins is toward the "twin" type which promises better picture definition for viewers and some economies for the operators, he believes.

Of more than passing interest was the following interview with Dr. Leslie Knopp, president of the British Kinematograph Society, who attended the convention. Dr. Knopp asserted that American motion picture producers stand in danger of losing world markets for the new large-screen presentations unless they begin to think in terms of standards applicable to theatres throughout the world.

In urging caution, he pointed out that foreign houses are physically unable to accommodate the large screens required or, as in England, find it virtually impossible by law to spend the large sums of money required to alter and equip their theatres. English exhibitors, he said, can spend only \$1,500

per year for alterations, equipment and maintenance work. To spend more, they must apply for a special license from the ministry of works and, even then, can spend a maximum of only \$15,000.

International Standards

It is of the utmost importance, Dr. Knopp said, that an immediate approach be made to the problems of *international standards*. With this in mind, the British Kinematograph Society has already been circulating a questionnaire to exhibitors to determine the sizes of screens their houses can accommodate. The same questionnaire is being circulated on the continent. The SMPTE is also planning to undertake circulation of a similar questionnaire in the United States, it was disclosed.

Dr. Knopp noted that an aspect ratio of about 2 to 1, or 2.2 to 1 could be accommodated without serious alterations, and declared that a screen of this proportion would not seriously diminish the impression of realism. Screen dimension, he said, must also be related to seating capacity, in addition to structural limitations. Excessive screen width, he asserted, results in loss of effective seating accommodations.

An interesting comment on stereo pictures was made by Dr. Knopp. "Both in England and the U. S., the public has complained that the wearing of spectacles produces headaches," he said. "If this becomes widespread, it would do the cinema much harm. It is not the wearing of Polaroid spectacles that causes the headaches—it is the human weakness of producers to show off their new toy.

"The audience is called on to perform the most unnatural optical gymnastics, not only calling upon the eyes to converge and diverge in quick succession, but to cause the spectator to try to increase the distance between his eyes from the normal 2½ inches to over 6 inches."

Appended are abstracts of additional papers read at the convention. (Other abstracts appeared in IP last month, April.)

PUSH-PULL NEGATIVE TRACK RECORDING

Murray Dichter and William H. Unger
Dichter Sound Studios, New York, N. Y.

A method is described for recording from magnetic tape onto push-pull negative film. The densities of negative and print are adjusted so that either 100-mil standard or 200-mil push-pull play-back may be used.

This provides a high-quality track for re-recording or standard track for review purposes, or for release printing.

CORRECTION OF FREQUENCY-RESPONSE VARIATIONS CAUSED BY MAGNETIC HEAD WEAR

Kurt Singer and Michael Rettinger
RCA Victor Div., Hollywood, Calif.

Wear on a magnetic recording head reduces the front gap pole face depth and thereby produces an increase of the gap reluctance. This in turn produces a higher effective bias flux which has an erase action and thus tends to attenuate the high frequencies as they are being recorded on the recording medium.

It is the purpose of this paper to present these performance variations as a function of the lowered inductance associated with head wear and to show how, simply through a correction of bias current, proper performance can be restored.

MICROPHONES, LOUDSPEAKERS AND AMPLIFIER FOR USE WITH STEREOPHONIC REPRODUCTION IN THE THEATRE

John K. Hilliard
Aitec Lansing Corp., Beverly Hills, Calif.

This paper will describe microphones, loudspeakers and amplifiers now being installed for stereophonic reproduction of motion pictures in theatres. Detailed characteristics of the individual components will be analyzed along with methods of providing proper equalization. Typical installation methods will also be outlined.

MULTIPLE-TRACK MAGNETIC HEADS

Kurt Singer and Michael Rettinger
RCA Victor Div., Hollywood, Calif.

The object of this investigation was to devise an economical construction method for multiple-track magnetic heads used in recording on 35-mm perforated magnetic film, particularly when such (reproducing) devices are used in a theatre for the stereophonic presentation of motion pictures.

A NEW ZOOMAR LENS FOR 16-MM MOTION PICTURES

Frank G. Back
Zoomar, Glen Cove, N. Y.

A new 16-mm Zoomar lens will be demonstrated. It has a speed of $f/2.8$ and a zoom range from 1 to 3 in. It is considerably smaller and lighter than the old 16-mm Zoomar and its picture quality has been improved to such an extent that in every zoom position it is comparable to the picture quality of a standard lens. It can be used at its full aperture of $f/2.8$ without loss of image definition. Its transmission loss is not greater than that of a standard camera lens and it therefore works under any lighting conditions where standard $f/2.8$ lens can be used.

A TRANSMISSION DENSITOMETER FOR COLOR

K. G. MacLeish
Eastman Kodak Co., Rochester, N. Y.

The need for unification of density measurements made in numerous and widely separated laboratories led to the develop-

ment of the Eastman Electronic Densitometer Type 31A. This densitometer reads diffuse densities of color films from 0.0- to 4.1 through narrow-band color filters, with a standard deviation of ± 1 per cent among different instruments. The construction and performance of the densitometer are described.

'House of Wax' Critique

Now that three pictures using the Polaroid 3-D process have played to large audiences in New York City, this type of film is beginning to lose its advantage of novelty, at least in the eyes of the critics.

The reviewers are no longer intrigued by talk of "revolutionary" developments in the industry and are starting to complain loudly about technical flaws they find in 3-D and stereosound, as well as about the hackneyed story material used to exploit the new processes. Here are some comments by the film critics of the *New York Times* and *Herald-Tribune* on Warner Brothers' "House of Wax."

Bosley Crowther, veteran *Times* critic, said his hopes for 3-D "went kaput" after seeing "Wax." "Apart from the fact that, it is baldly, unbelievably antique in its melodramatic plot and style," he continued, "it shows little or no imagination in the use of stereoscopic images and nothing but loudness and confusion in the use of so-called stereophonic sound. The impression we get is that its makers were simply and solely interested in getting a flashy sensation on the screen just as fast as they could.

Times Critic Depressed

"Obviously, such a lurid story does lend itself readily to the full-bodied realistic treatment potential in stereoscopy, and the Warners . . . have given it the technical 'works.' In the new Eastman color and 3-D, the human figures look round and firm, and the ghoulish episodes and scenes of incendiarism develop an additional power of shock. But the effect is little more exciting than any perceptible improvement in color might have achieved, and actually the advantage of color is here offset to some extent by the dark Polaroid glasses one has to wear. Clearly, nothing of an inventive nature has been done with stereoscopy. Also, some people say the system strains their eyes.

"And certainly the stereophonic sound with which 'Wax' is dubiously endowed causes strain on the ears in a measure which may give some auditors actual pain. With sound outlets all around the theatre, the noises come not only from the screen, where the visible action is appearing, but often from the sides and back walls. Turned on full blast, when the fire is roaring or when the villain is about to plunge the girl in boiling wax, the effect is not only near deafening but appreciably exhausting to the nerves.

Stereosound Distracting

"As for the promised potential of this multiple-outlet system to achieve a greater dramatic realism by controlling the direction of sound, it is hardly demonstrated in this picture. When a voice suddenly speaks from the left wall of a theatre before an actor

enters from the left side of the screen, the illusion is far from that of a person entering. It is that of a disturbance in the side aisle; and when noises suddenly boom from the back of the theatre, they have no relation whatever to the screen, even though they're supposed to be created by actors who just went thataway.

"Directional sound has potentialities, but the whole theatre is too large a frame—at least so long as the image area remains the conventional size screen.

Stories Are Throwbacks

"Surely the new age of movies will not come in such films as 'Wax' or Columbia's little 3-D shocker, 'Man in the Dark.' These represent depressing throwbacks to the content and style of bygone days."

In the *Herald-Tribune*, Otis L. Guernsey, Jr., is even more emphatic in his opinion of "Bwana Devil" "Man in the Dark" and "Wax," the three stereo pictures that he has seen.

After viewing them, he asserts, "one is tempted to arrive at definite conclusions about this new wonder medium, the wonder being that anyone would take it seriously except as a temporary fad. These conclusions might be arranged as follows:

"1. It is a nuisance.

"2. It detracts more from the cinema than it adds.

"3. No one has yet made the good picture that seems certain to prove stereoscopic 3-D is just so much excess baggage.

"In the case of 'Wax' at the Paramount, there is the added distraction of Warner-Phonic sound, with audio outlets planted all over the theatre. It makes for deafening volume in scenes of high melodrama in this story about a crazed sculptor and his ghoulish wax museum; and it drags the attention away from the screen with voices and footsteps coming from the back and sides of the theatre. The screen is and should remain the center of attention, and the sound gimmick is as distressing as stage direction which causes actors to run up and down the aisles."

ARMY PROJECTIONIST IN KOREA



The Army projectionist is just about the most popular man in his unit over in Korea. Anywhere from the front lines back, at anytime of the day or night, you are apt to come upon a G.I. audience watching a film, with many men attending seven days a week. Shows are given outdoors, in tents, Quonset huts or any place that a projector can be set up. About 2,000 prints are circulating in Korea, and four new feature programs arrive each week from Hollywood.

History of the American Labor Movement

Prepared by the U. S. Dept. of Labor, this history traces labor activity and legislation from Colonial times to today.

Chapter IX. AFL and CIO Cooperation

IN 1949, representatives of the free trade unions joined in forming a new International Confederation of Free Trade Unions. The AFL, CIO, and the United Mine Workers cooperated in the formation of this organization, which represents an estimated 51 million workers in about 60 countries outside the Communist sphere of influence. The ICFTU is committed by its constitution to support "the right of all peoples to full national freedom and self-government" and to "champion the cause of human freedom, oppose and combat totalitarianism and aggression in any form."

In January 1948, the AFL, the Railway Labor Executives' Association, and the International Association of Machinists joined with labor movements from a number of Latin-American countries to establish the Inter-American Confederation of Workers which in January 1951 was absorbed by the newly formed Inter-American organization of the ICFTU. This regional organization claims to represent about 20 million.

The AFL has also played a conspicuous role in the International Labor Organization (ILO) since the United States became a member in 1934. This world-wide organization, with a membership from 62 countries, considers measures and carries on programs designed to improve labor standards and working conditions on an international scale. Annual conferences of worker, employer, and government delegates are held and a permanent headquarters is maintained in Geneva, Switzerland.

The Communist Problem

Organized Communist activity as it exists today in the American labor movement dates from November 1920, when the Trade Union Education League (later, the Trade Union Unity League) was founded. The TUEL at first rejected the theory of dual unionism, and adopted a policy of "boring from within" established unions. Its efforts failed.

With the organization of the TUUL in 1929, the Communists for a time

abandoned their previous tactics and sought to establish industrial unions independent of the AFL. This attempt to split the union movement likewise failed.

After the CIO was formed, the Communists shifted most of their interests to that organization. Some of them became organizers and national union officers. As time passed it became evident that they were less interested in legitimate union activities than in the advancement of the "party line." Their espousal of Soviet Russia became increasingly distasteful to the CIO leadership and the rank-and-file membership.

Left-Wing Unions Expelled

Final expulsion of the Communists from positions of control in the CIO was assured when the CIO convention in the fall of 1949 adopted a constitutional amendment barring from office in the national CIO any individual "who is a member of the Communist Party, any fascist organization, or other totalitarian movement" or who "consistently pursues policies and activities" followed by such organizations.

Two other constitutional changes empowered the CIO executive board to remove, or refuse to seat, offending officers and to revoke the charters of affiliates found guilty of pursuing policies or engaging in activities prohibited by the CIO's non-Communist amendment.

Directly connected with the Communist issue was the expulsion by the

Altec's 'All-Out' on Stereo Sound

Altec seemingly is sparing no effort or expense in its drive for industry-wide use of stereophonic sound. Staff members recently attended the M.P.T.O.A. of Virginia sessions at Old Point Comfort, Va., as the first of such meetings designed to acquaint exhibitors with the low-down on stereo sound. Also, Bert Ennis, well known industry publicist and former assistant advertising manager for Paramount Pictures, has been engaged to launch a special promotional campaign on behalf of the new sound system.

convention of two affiliated unions, the United Farm Equipment and Metal Workers, and its third largest affiliate—the United Electrical, Radio and Machine Workers.

Action by the CIO executive board against the remaining unions charged with Communist activities followed during the early months of 1950. The International Union of Mine, Mill and Smelter Workers was expelled February 15, 1950. The Food, Tobacco, Agricultural and Allied Workers Union of America, the United Office and Professional Workers of America, and the United Public Workers of America were expelled March 1, 1950. The American Communications Association and the International Fur and Leather Workers' Union of United States and Canada were expelled June 15, 1950. Three additional unions, the International Longshoremen's and Warehousemen's Union, the National Union of Marine Cooks and Stewards, and the International Fishermen and Allied Workers Union of America, were expelled on August 29, 1950. The last-mentioned union, however, merged with the ILWU, effective July 1, 1950.

In taking this series of actions against its left-wing affiliates, the CIO executive board noted six periods during which the expelled unions followed Communist Party policy after the mid-30's. These included (1) the prewar period of collective security; (2) the period between the Soviet-Nazi pact of 1939 and the invasion of Russia by Germany in June 1941; (3) the period between June 1941 and the attack on Pearl Harbor, December 1941; (4) the period between 1942 and June 1944, during which Communists constantly called for opening a second front; (5) the period after the Tehran Conference when the Communists called for complete cooperation with the capitalist class; and (6) the post-war period characterized by increasingly sharp criticism of American foreign policies and labor's espousal of the Marshall Plan.

Will Labor Unite?

Efforts toward labor unity have been made repeatedly since the late 1930's. At first, the differences stemmed primarily from the views of the AFL and CIO on the industrial organization of mass-production workers. As the years have passed, the importance of this issue has diminished. Later discussions, started during the Second World War,

have turned to problems of a procedural nature. For example, the AFL desires "organic" unity, while the CIO favors "programmatic" unity; that is, cooperation on specific issues—whether legislative, political, or international—with organic unity to come at an indefinite future date.

In spite of the appearance of continued disagreement, the two organizations are, in fact, drawing closer together. The expulsion of Communist-dominated unions by the CIO removed one of the principal barriers to unity. The AFL and CIO cooperated during 1949 in the establishment of the International Confederation of Free Trade Unions. They have worked together in other ways to combat Communism and to promote democracy and improved living and working conditions in other countries.

In political and legislative activities

leaders of the LLPE-AFL and PAC-CIO work together. Joint labor committees have been established in various localities to promote a unified political program. The passage of time and emphasis upon current problems have also tended to reduce the differences over craft or industrial unionism.

Late in 1950 organized labor's growing concern with the Government's emergency defense program brought the AFL and CIO together in a United Labor Policy Committee. This Committee, which also included the Railway Labor Executives' Association, served as a common spokesman for the affiliated groups. It spoke out strongly in favor of greater representation of labor in the various defense agencies and demonstrated the ability of the several labor groups to join forces and pool their views in a common objective.

[CONCLUSION]

Tv Film Men Hear Goldsmith

Dr. Alfred N. Goldsmith, chief consultant to Radio Corp. of America, headed a panel of scientists who spoke on engineering as applied to films on television at the recent National Television Film Council meeting. Other speakers were John Stott, Tri-Art Color Corp.; E. M. Stifle, Eastman Kodak Co.; Dr. Peter C. Goldmark, CBS Laboratories; C. Craydon Lloyd, General Electric of Syracuse, and Frank Marx, American Broadcasting Corp.

Tax Receipts Up for February

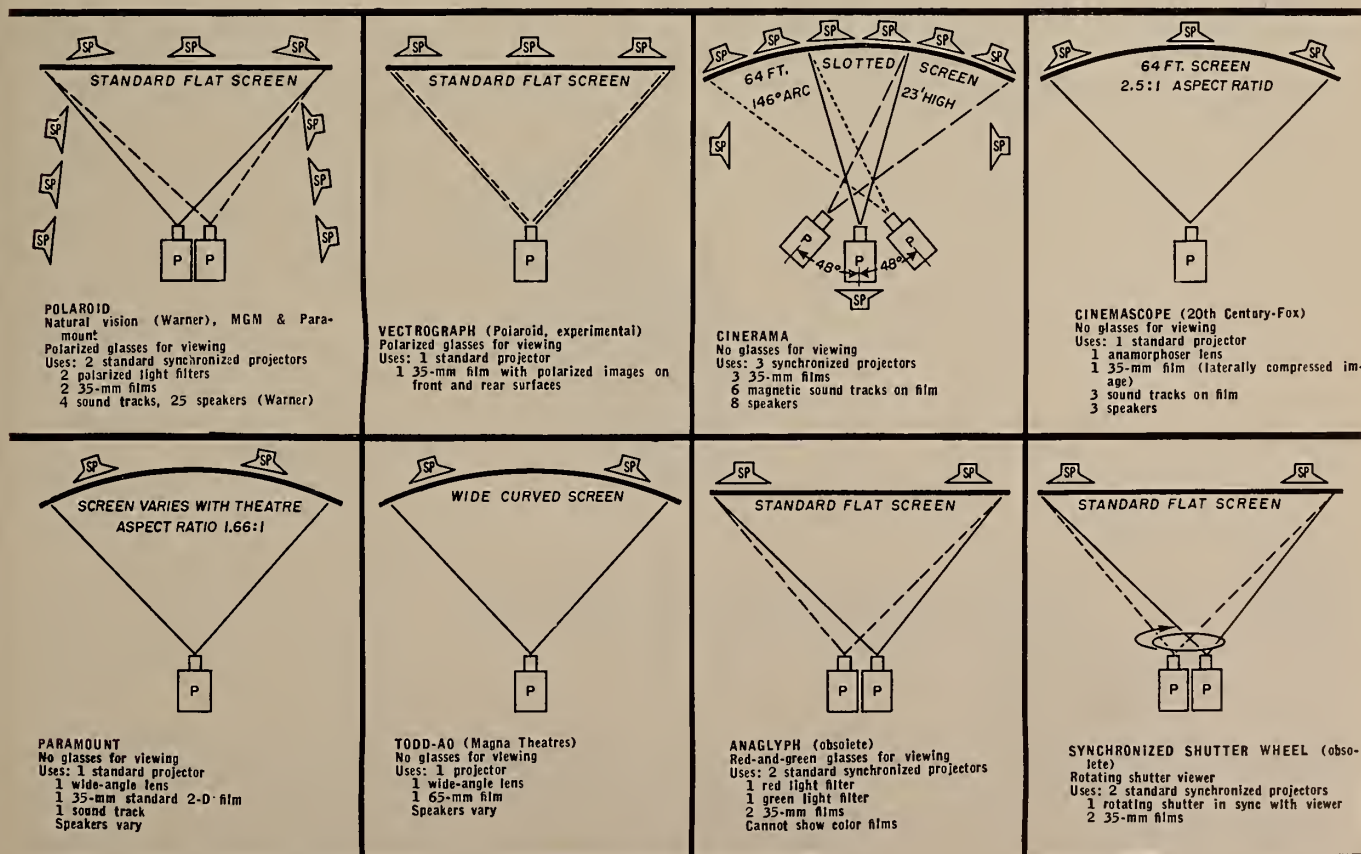
A slight upward trend in the amusement business for February was reflected in the 20% admission tax receipts. March collections, which generally reflect February at the boxoffice, were recently reported by the Bureau of Internal Revenue.

March receipts came to \$21,031,714 which was about \$400,000 better than the previous month and nearly \$1,200,000 above collections of March, 1952. About 75% of the figure is estimated to come from motion pictures.

Graphic Outline of Various 3-D and Wide-Screen Processes

Herewith is presented a graphic representation of the various "new" visual and sound production-reproduction and projection systems made available by our esteemed colleague, *Tele-Tech* magazine (May 1953). These diagrams provide a concise visual wrap-up of what is boiling in the current technological cauldron.

Two of the systems outlined, the Anaglyph and the synchronized shutter-wheel system are now obsolete; and another, the Vectograph, is old-hat suitable primarily for still pictures. In general, these drawings present a clear picture of what was, what is, and what might happen in the 3-D and wide-screen fields.



MONTHLY CHAT: Progress Report

(Continued from page 5)

the full width of the picture. Our eyes just couldn't encompass such a visual expanse by employing normal viewing.

Now, if 20th Fox *does* modify the CinemaScope aspect ratio, and if it be a fact that the vast majority of motion picture theatres cannot possibly accommodate a screen of, say, more than 25-30 feet in width, why should it be necessary to utilize the compression-expansion Chretien lens about which 20th Fox has kicked up such a fuss? The grain properties of present-day film permits we dumb projectionists to still set about employing the time-honored practice of filing an aperture plate and getting whatever size screen image we elect—particularly when Hollywood plans to shoot all future stuff so as to prevent any loss of significant visual detail, notably cutting off the heads of characters.

Once these production-exhibition topers get together on some sensible standards program, we may sit back and relax secure in the knowledge that with one new screen and, possibly, a new pair of lenses, we can show anything that comes down the pike, including 3-D. Of course, a 4-projector setup will be required for 3-D if we are not to be forced to have intermissions in the presentation.

20th Fox's proposal to license other major producers for shooting pictures with its special cameras and showing them with its special lenses leaves us a bit bewildered in view of the foregoing discussion of aspect ratio, *etc.* Just what would be licensed?

CinemaScope Dissected

Other impressions of the Cinemascope showings at the Roxy (some improvement in the process is not impossible before any widespread distribution of such pictures is made):

1. There definitely is a center hot-spot on the screen, with the light fading fast toward the sides. This we expected with the wide expanse of screen and with the lens setup.

2. Definition definitely not good, although the use of color subjects exclusively minimized this shortcoming.

3. The curve of the screen was too deep, about 5 feet at the Roxy, and while necessary for this vast expanse, it irritated us because we were always conscious of it.

4. The joining seams of the screen were clearly visible, but 20th says this will be corrected.

5. Light level of about 5-6 foot-lam-

berts quite low, but better than we expected 20th to get.

6. Pronounced distortion over a substantial area at each side of the screen.

7. All intimacy was lost for this viewer, and we doubt that anybody will experience a sense of intimacy with a 65-foot screen image, *ala* Niagara Falls.

8. The stereophonic sound presentation was again mangled; of this more anon.

General estimates for a CinemaScope installation run as follows: for the largest theatres, \$25,000; for houses of 1500-2000 seats, \$15-17,000, and for the smaller houses, \$8-12,000. *These figures include stereo sound equipment.* Such figures are variable, because each house offers special engineering problems.

The installation pattern is as follows: an order for CinemaScope is placed with 20th Fox, which will then inform Altec, RCA and General Precision Labs, all of whom make stereo sound systems and can provide engineering advice and servicing. The anamorphic lenses and the "Miracle Magic" screen will be supplied by 20th to the equipment house having the deal. 20th has placed bulk orders for both items in order to cut costs.

Unique Sound System

But 20th Fox wasn't content with the CinemaScope splash at the Roxy. Shortly thereafter it announced that it has developed and is going ahead with a process for the placement on a single strip of 35-mm film *the picture image and four magnetic sound tracks*,—two on either side of the image, for stereo reproduction. Thus would be eliminated the extra magnetic strip carrying three sound tracks and the reproducer required therefor.

If successful, this system would effect a tremendous saving in installation and equipment costs; ditto in the studios and right down the line from processing laboratory through the exchanges and on to delivery costs. Ease of handling is apparent, and 20th Fox didn't fail to ballyhoo the savings in "manpower."

How does 20th Fox plan to accomplish this not inconsiderable feat? Well, they first would narrow the sprocket holes on regular 35-mm film from 0.110 to 0.078 inch. At the projector, the *width* of the intermittent and other sprockets must be reduced slightly, and a multiple film-driven soundhead must be installed between the upper magazine and the regular projection head. The new soundheads, said to be in production by General Precision, Altec, RCA and Westrex, will be part of the CinemaScope "package" deal.

No mention was made by 20th as to

who was making the new sprockets or when they would be available; ditto for the supply of film with the new perforations. Other difficulties might arise in connection with proper sprocket tooth engagement for *both* new and old perforations, and in the fact that the steel used in the sprockets might as a result of close proximity demagnetize the magnetic tracks. 20th Fox assures us that they have both problems licked, but they don't say *when*. IP will have a long look-see at this situation and render a report as soon as possible.

To round up the 20th Fox position, it would seem that if it gives attention to the present CinemaScope aspect ratio of 2.66 to 1 by reducing it to, say, 2 to 1 or even less, and if it keeps its picture width down to a reasonable figure, and if it puts across the four-track, single-film system, it might have something. We shall see.

Cinerama in Turmoil

Meanwhile, Cinerama, the three-camera, three-projector, stereo-sound system which started all this current fussing, has come upon evil days in terms of management headaches, lack of product, and financial worries. Top management has been drastically revised, and the early start Cinerama enjoyed on other wide-screen systems has been lost by an inexplicable failure to produce pictures.

Although a smash box-office hit wherever it has been shown, Cinerama spells MONEY in production and exhibition costs—quite apart from the dough required to outfit a theatre. Scenic stuff won't carry Cinerama far, and even if it should come up with spectacle stuff of the Broadway stage type, it is believed that there are only about 18 cities in the U. S. that could support such shows.

The Stanley Warner circuit in the Middle Atlantic area reportedly has taken over the distribution of Cinerama, with the first figure of 150 such theatres during the next year having dwindled to 50 and then to 25. Cinerama is big stuff for big cities at big money—and it has no product.

Elsewhere on the panorama screen front there were important doings. All major companies except M-G-M have ignored the CinemaScope offer of its facilities and have gone their separate ways. Here's how the other majors stack up in terms of aspect ratio preferences (keeping in mind 20th Fox's 2.66 to 1 ratio):

Paramount—1.66 to 1; RKO—1.70 to 1; Columbia—1.85 to 1; M-G-M and Warners—2 to 1. It will be noted that these figures are not too far apart, and it is likely that just a little giving and

taking all around could achieve unanimity for a standard ratio. There are indications that this may be in the making, for Leonard Goldenson, president of United Paramount Theatres, pitched directly to Nicholas Schenck, boss of Loew's, Inc. (which owns M-G-M) for an agreement on standards. Schenck backed away from such a deal with a "wait a little while" reply; but the significance of such an exchange should not be minimized.

Now if 20th Fox would relent a bit in its stiff-necked attitude of our-way-or-not-at-all, something wonderful for the industry could happen.

IP reiterates its opinion that for all aspect ratios from 1.66 to 1 up to 2 to 1, and given a sane screen width, there is nothing that cannot be licked by long-standing projection practice. A new screen and new lenses—and stereo sound if desired—and a theatre can play anything that comes down the road. Plus a projector interlock, of course.

IP holds that a projection system adopted by any theatre should have two basic characteristics: 1, it should fill the normal line of sight for a majority of the seats, and 2, it should be consistent with not ripping out a theatre's entrails by major structural changes. It can be done.

As for screen sizes for *all* types of pictures, IP's preference is as follows:

Small Theatre: 30 x 18 ft.

Medium Sized: 44 x 24

Large Theatre: 50 x 38

Stereosound Mishandled

The stereophonic sound process, in its earliest showings, has been the victim of frightful handling. This process has definite inherent worth and it can add immeasurably to the enjoyment of any picture. But this inherent worth is being throttled by grievous and incomprehensible mistakes on both the recording and reproduction ends. The chief defect in handling is the deafening volume level maintained—the boys have extra sound tracks and extra loudspeakers, ergo they must use them. Both the "House of Wax" and the CinemaScope showings were among the most irritating experiences one can have. Some of the directional sound emanations were just stupid and utterly silly.

It was not until we saw a special show staged by RKO in a N. Y. City theatre that we appreciated the worth of stereophonic sound, despite the obvious faults stemming from microphone placement in recording.

What we need and could have in a stereo sound system is *fidelity*, not deafening volume. It can be done.

There have no startling developments on the 3-D front. "Bwana Devil"

Features

Western Series

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News



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and "House of Wax" still are packing them in, but indications are not lacking that the time will come soon when the novelty factor in the setup will collide head-on with the continuing acceptance by patrons of viewing spectacles. One thing is certain: the cheap cardboard viewers that must be held to the eyes must be supplanted by a more substantial viewer that has bows to enable proper fitting. IP understands that such a viewer is now available at a cost of 15 cents.

The question of projector interlocks for 3-D showings has induced much discussion in projection and equipment manufacturing circles. For its part, IP would not accept the mechanical interlock if it were at all possible to obtain a selsyn unit. Mechanical interlocks were all that were available when exhibitors were screaming for such units, so the equipment people cannot be charged with bad faith.

But if selsyns are IP's choice, it is quick to point out that even these units require some immediate changes. Selsyns were never intended for projection work, thus they turn over at 1220 r.p.m., as contrasted with the projection requisite of 1440 r.p.m. Nobody will be dread-

fully inconvenienced by the selsyns now in the field; and IP is happy to report that General Electric will move immediately to turn out the units at 1440.

The light transmission of Polaroid filters is the topic of some interesting comment by Robert A. Mitchell elsewhere herein. Careful tests by him indicate that the transmission of Polaroid viewers and projector filters average about 40%. Having no commercial interest in the sale of these devices, IP points up this fact merely to emphasize the necessity for pouring on the light when projecting 3-D pictures.

With all this fussing about new processes, visual and sound, let's not forget that a bad picture cannot be helped by them and a good picture cannot be hurt by their absence. We're mindful of the fact that a *good* old-fashioned 2-D picture, "Moulin Rouge", is now in its 14th week at the Capitol Theatre on Broadway, N. Y. City, and that over on 52nd St. another *good* 2-D picture "Lilli", still is knocking them dead around the clock daily at \$1.50 a head.

We wish wistfully that the dozen or so men whose aggregate income as "leaders" of the motion picture industry runs to several millions annually, and who meet

socially with the utmost cordiality in Hollywood, in Miami and New York, in Paris and Monte Carlo and in Rome—we wish these fellows would spend about \$25 for a hotel suite some afternoon and, with the help of a few first-class technical minds, reach a degree of agreement which would put an end to all this insanity. It's simply incredible that they don't.

JAMES J. FINN

Foresee Need for Additional Projectors at 3-D Shows

To make possible 3-D showings without intermission, several large theatres will soon install two additional RCA projectors to provide a total of four in the projection room, it was reported recently by J. F. O'Brien, theatre equipment manager for RCA Victor.

After reviewing the 3-D situation, Mr. O'Brien stated, RCA decided that extra projectors offer the only practical solution to problems raised by 3-D film releases. They eliminate both the necessity for a break in the program to change film and the need for oversized film reels.

Installations Mounting

Mr. O'Brien also reported that RCA stereophonic sound systems were installed in four Texas theatres for the world premiere this month of Warner Brothers' first 3-D feature, "House of Wax." The houses converted are the Majestic in Dallas; the Texas in San Antonio; Palace in Fort Worth, and the Majestic in Houston.

A new theatre screen featuring a silvered surface designed to meet requirements of 3-D and wide-screen systems was also announced by RCA. It is suitable for all such systems, the company said, and is also recommended for 2-D presentations with suprex or high-intensity carbon arc light sources.

OBITUARIES

JOHN E. HAUSER, old-time member of Local 96, Worcester, Mass., died in his sleep on April 25. "Jack" Hauser served as an official of the Local for the past 30 years, and until two years ago he held the office of business representative. He was associated with the Poli circuit in Worcester for the past 40 years, having worked as stage manager at Loew's Poli Theatre for 26 years. In recent years, Hauser was active in charitable and religious organizations.

ERWIN L. DEFFA, 53, member of St. Louis Local 143, recently succumbed to a fatal heart attack. He was buried Friday, May 1 at the New St. Marcus Cemetery, located on the outskirts of St. Louis.

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DRIVE-INS DISSECTED

(Continued from page 12)

ted view for each successive row of cars. The top of the car in front must not obstruct the view of the car in back of it, and so on out to the last row.

Probably the ideal grading system and land location is one where the screen sits on a slightly higher spot than the last arc of ramps and the ground gently slopes from the screen tower to the last ramp. This also simplifies the matter of drainage when it rains, a matter of no small importance.

If drainage is not adequate and the ramp surfacing not proper, a rainy evening and several hundred cars can make a quagmire of a drive-in besides creating much ill will and making necessary costly regrading of the ramps. If the natural over-all slope of the land will not provide surface drainage, an underground system of ducts is necessary.

Surface, Spacing of Ramps

The surface of the ramps and connecting driveways must be durable and not cause undue trouble while entering and leaving the ramps. Some deluxe places have asphalt surfaces, but the majority use a mixture of crushed rock, coarse gravel and sand coated over-all with heavy road oil and rolled. The oiling and rolling is repeated at intervals, depending on wear and tear and climate.

The ramps, previously defined as arcs of concentric circles, are usually about 40 feet apart to allow cars to enter and leave easily. The first ramps should be at least 100 feet from the screen; 130 to 150 feet is preferable. The effect is the same as when one sits in the front row of seats in the ordinary movie theatre.

Of the 40 feet allowed between ramps, about 18 feet is slanted and allowed lengthwise for parking the car. About 10 feet in width is allowed for each car and for placing the speaker posts and their concrete bases. The



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remainder of the ramp width and length is allowed for maneuvering the car into and out of the ramp.

The recommended procedure is to drive the car forward into the ramp, and when leaving, drive forward into the space ahead and out to the right. To back the car out of the ramp is not considered good form.

As mentioned earlier, the ramps must have a certain slope in relation to each other and to the screen. The profiles of ramps change at varying distances away from the screen and also at varying angles sidewise from a line perpendicular to the screen. Every movie patron is familiar with the distortion caused by viewing the screen from a seat at the side of the theatre, and the same effect is noticeable in a drive-in. For that reason cars are usually confined to an area of about 40 degrees on each side of a line perpendicular to the center of the screen center.

Modern Sound Speakers

The earliest drive-ins were primitive affairs and depended on the so-called "blast system" to provide dispersion of

sound to the cars. Powerful speakers were hung on the screen tower and on poles scattered about the ramp area. With this method people nearest the speakers were blasted and jolted by the high level of sound, and people in adjoining homes and farms could hear the sound.

With the development of the in-car speaker each auto has a speaker with volume control available. Each speaker post has two speakers resting on it, thus one post serves two cars. When not in use, the speakers rest in cradles on the post top. The speakers are connected electrically to the post junction by flexible cables.

When in use, the speaker is lifted from its cradle and hooked on the car door, on the inside, by the rubber-covered hook on its back. When the patron is about to depart, he unhooks the speaker and replaces it in the cradle on the post.

Speaker Damage Common

This does not always happen. Frequently, through forgetfulness or malice, the car is driven from the ramp with the speaker still in place resulting in a broken speaker cable. The cost of such damage is an appreciable figure during a season, and various methods have been tried in an effort to prevent it.

One expedient that worked too well was that of attaching the speaker to the concrete base by means of a steel cable. When the auto was driven away with the speaker still on the door, something had to give way with the result the car door was damaged. In some cases car doors were damaged so badly that replacement was necessary. In one case a car door was torn completely off.

As far as the speakers themselves are concerned, on a day-in-and-day-out basis, the repairs are mainly to the volume controls, diaphragms, and

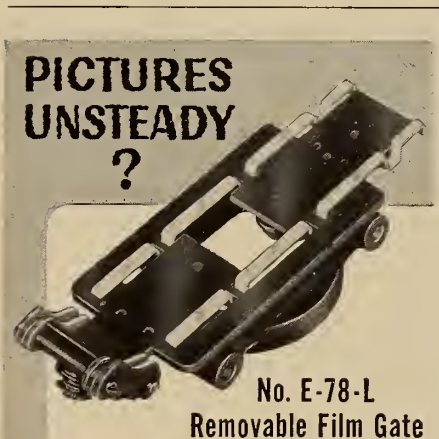
loose connections in the wiring. If speakers of cheap construction are used, the outage time for repairs will average about 2% of the total speakers used, on a weekly basis. Better quality speakers will, of course, give better service and better customer satisfaction. At the end of the operating season the speakers are taken down from their posts and stored indoors.

Amplifier Output Distribution

The output of the amplifiers in the projection room is fed to the speaker post junction boxes by underground cables fanning out from the projection room. As a rule, the ramps are divided into sections with a separate feed line from that section to the amplifiers and controlled by a switch for each section. In that way a short-circuit or "ground" at some particular post will not disable the sound for the entire area, since the defective portion can be switched out and an equivalent resistance switched in to present a constant impedance to the amplifier output.

Some of the more elaborate drive-ins have a paging switch on each speaker. When this switch is turned on, it flashes a light in the concession stand which indicates that that particular car wants service. A girl in appropriate costume is dispatched to that car to take the patron's order for popcorn, cigarettes, etc.

In this system two sets of wiring are



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necessary: one radiates from the projection room to each car, and the other radiates from the concession stand to each car. A three-wire underground cable is used in this instance. One of the conductors is common "ground", and the other two carry the audio and paging circuits.

Projection Room Data

The projection room, as mentioned previously is usually in the same building as the concession stand along with rest rooms, storage rooms, etc. Because of space limitations, the projection room is small and low-ceilinged. The entire central building must have a low vertical outline in order to give a clear view to cars in outlying ramps. As a result, the lens ports are just above ground level and the floor of the projection room is considerably below ground level. This poses the problem of excluding surface drainage water from the room during a heavy rain. And instead of climbing stairs when he goes to work, the drive-in projectionist goes down several steps. The projection rooms are commonly made of either cement block or hollow tile. Fireproofing depends on local laws; in some cases fireproofing is non-existent.

The projectors used in drive-ins are of the conventional theatre type with rear shutters a *must* on account of the high-amperage lamps employed. There is one point of difference that may be of interest. The drive-in projector must be tilted up to the screen rather than downward as in the average theatre. Perhaps the British expression is that the projector has a reverse "rake".

If a standard projector base is used, it is necessary to place blocks under the front end of the base.

Much simpler is the use of a base made for such a purpose which allows easier tilting and steadier foundation for the projection. Most American projectors are intended to have excess oil drain to the front of the mechanism. In drive-in projectors the oil drainage is in the opposite direction and becomes something of a problem. Otherwise the projectionist's job, mechanical-wise, is about the same as in a movie theatre.

Arc Operation, Power Supply

Suprex lamps using copper-coated carbons operated at 60 to 80 amperes are favored for the smaller drive-ins. Larger places require higher intensity lamps at currents as high as 150 am-

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peres. The exhaust vents from the lamps are rarely more than 5 feet long from the lamp housing to where the vent goes through the roof. Sometimes a strong wind will blow back down the vents and into the lamphouses with consequent flickering of the arc, and in some cases damage to the reflectors.

Since drive-ins are in a semi-rural location, they draw their electrical power from transmission lines which are frequently plagued by unsteady voltage. This unsteadiness may be abrupt and irregular, or it may be a steady decline which begins about the time the show starts and reaches its lowest point about 10 p.m., and then starts climbing again. By closing time it may be 10 to 15% above normal. In some instances the line voltage has dropped from a normal of 117 volts to 85 volts.

One can imagine the effect on light and sound and appreciate why the pro-

jectionist must needs be nimble. Happily such extreme cases do not occur too often.

Smaller drive-ins tend to use dry-plate rectifiers as lamp current source; the larger jobs favor the motor-generator with its additional advantage of freedom from line voltage fluctuations.

Huge Screen Sizes

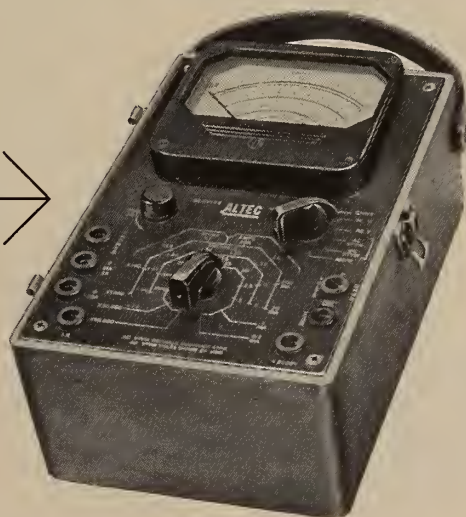
Screen sizes vary 40 feet to 53 feet in width, thus requiring projector lenses of fairly short focal length; 3 to 3.5 inches are the most common, depending on screen size and projection distance. If the distance is too great, much higher current is required for the arclamp. If the distance is too short, the lens becomes quite short in focal length and one approaches the point of diminishing returns along with severe projection angles and consequent distortion.

Coated lenses of high quality are needed to squeeze the last bit of light out of the projection system. The screen of course is solid. It needs no perforations, since the loudspeakers are in each car.

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ference, in actual manipulation, between the drive-in and the ordinary projection system lies in the amplifier power and layout. The large number of speakers absorb a good amount of audio power, more than the usual movie theatre. Small drive-ins can get by with 70 watts. A 900-car layout will require possibly 500 watts output from the main power amplifier.

Path of Sound Output

In general practice, the photo-cell output from the projector soundhead goes to a medium-size amplifier which feeds a number of large power amplifiers whose output transformers have multiple secondary connections. Each secondary tap feeds one ramp section with 20 to 40 speakers in that section. A switching arrangement allows the switching in or out of each group of speakers so that a short-circuit at any one speaker will not disable the total amplifier output, as mentioned previously. At least one spare power amplifier should be kept in readiness so that it can be switched into the ramp

circuit in case of failure of another amplifier.

The common type of power amplifier is of three or four stages utilizing inverse feedback and push-pull output. The final stage is usually four 6L6 tubes in parallel push-pull or two 807's in push-pull. Best practice is to mount the amplifiers in standard racks spaced out from the wall to allow room for servicing. In some places they are hung from nails driven into the studing or else placed on rickety shelves. It all hinges on the owner's pocket-book.

Underground Cables Required

The cables carrying the audio signal to the speakers are laid about 18 inches underground. They must be under the surface far enough to be protected from the blades of earth-moving machinery and yet not so far buried as to increase cost of installation when the theatre is built, and also be available in case of replacement or repair.

The construction of the cable is probably similar to underground cable used in Britain, that is, with a central pair of triplet of flexible wires well insulated and covered overall with rubber or a stable plastic overcoating. Diameter ranges from 1/2 inch upwards, according to power carried and quality of outer covering. Dependability is the *sine qua non*.

It might be mentioned that lightning can sometimes be troublesome in the speaker cables. The lightning induces severe ground currents circulating in the cables which damage the speakers; or in some cases the pulses of ground current feed back to the secondaries of the amplifier output transformers. Since the surge is applied to the secondary (few turns) it appears across the primary (many turns) as a high-voltage pulse applied to the plate of the output valves, with resulting damage

to the valves and related components. Luckily, this is rare, but it has happened. Shielded cable and adequate earthing (grounding) helps considerably in such cases.

Entry and Exit Problems

Like the usual theatre, space must be allowed for the "standees" who come in while the show is in progress or while the theatre is filled. In American parlance they wait in the lobby or in the "crush hall" in England (I think). In the drive-in a space is allowed for the cars to congregate while waiting for an empty ramp space, with due allowance for ease in reaching the concession stand. Also, some space must be allowed for cars exiting after the occupants have seen the show. With traffic as it is on American highways, the cars leaving the theatre cannot always depart immediately. Therefore a space for these cars should be included in the layout.

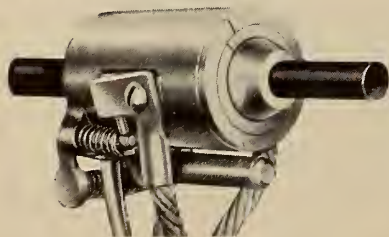
With the coming of winter the drive-in is faced with the problem of shutting down for the long cold winter months when the temperatures often fall as low as 30 degrees below zero. The intermittent movements should be drained and all excess oil wiped out of the machines and soundheads, and generous amounts of cellulose fiber packed in the machines to absorb any oil seepage. The projectors, motor-generators, amplifiers, etc. should be covered with canvas to keep out dust and moisture condensation.

The lenses should be removed to a

huff

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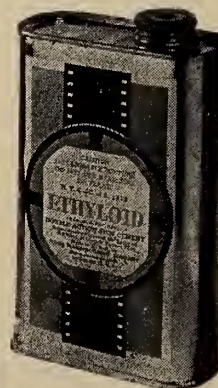
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location where temperature variations are not so great and where humidity is more nearly constant. Some owners make a practice of suspending a 100 watt bulb in each amplifier section; said bulb burns all winter long to keep temperature and humidity constant. Such a procedure seems costly, but it will pay for itself during the summer months in preventing costly breakdowns. The long-suffering screen tower stands there all winter and gets a new coat of paint in the spring. Needless to say, all water pipes and plumbing are drained and filled with oil to prevent sewer gas from leaking into the buildings.

The Screen Tower, Surface

"Screen tower" is the term applied to the structure whereon the projected image comes to rest and it can be as elaborate or simple as the purse allows. Some screen towers are prefabricated, that is, they are factory-made in various sizes and shipped to the site of the drive-ins dismantled or disassembled into their component parts. Upon arrival they are assembled by a trained crew or by carpenters.

Such screens are usually made up of an iron framework; supports or footings are imbedded in sturdy concrete bases heavy enough to withstand the stress of gales. The main iron pieces are 3-4-inch angle iron and the cross members of lighter material. To these cross members are bolted the flat sections comprising the screen sub-base. Over these is nailed the 4x8-foot sections of waterproof plywood of the screen surface. The plywood is spray-painted with the usual subcoats of paint and given a final coat of pure white matte paint. The black masking is painted around the border to suit the size picture intended.

A more common practice, however, is to combine the screen tower with the administrative offices, ticket office and advertising marquee. In this type construction the screen tower is a rectangular box about 40 feet wide, 15 feet deep, and 60 feet high, the dimensions depending upon screen size, office space,

etc. Such a structure must be firmly anchored and braced to cope with wind pressures which can be quite high.

It might be appropriate here to tell the tale of a drive-in which succumbed to a bad wind several years ago. During the gale the screen tower, offices, and all blew away and scattered across the landscape. The film being shown was "Gone With The Wind"! Because of the effects of weathering, it is necessary to repaint the white screen surface each year and sometimes oftener, including the black masking border.

Drive-In Importance Growing

As might be expected, there is an element of competition between the drive-in and the downtown theatre. Since the drive-in is in operation for a few months of the year, there would appear to be a tendency for the film companies to favor the downtown theatre that operates all year around, which, in the writer's opinion, is only right. However, in the last few years the drive-ins have had such profitable business that they are in a position to compete with the city theatres in the bidding for later release pictures.

But the general feeling seems to be that drive-in patrons are not too much concerned with the lateness of pictures. They seem to be content with second- and third-run pictures as a rule. It must be admitted that the drive-ins have snared a good share of the summer business from the city theatres that boast later pictures and air-conditioning. Many of the owners of the city theatres have built drive-ins to meet the competition. This is understandable when you consider that the drive-in, during its season of operation, will pay a larger return on the money invested than will the city theatre.

For a while there was a belief in the movie industry that the drive-in was a flash in the pan, a temporary infatua-

tion that eventually would die a slow death. Time has shown these prophets to be wrong because the drive-in is steadily increasing in numbers as well as volume of business.

The Projectionist's Status

Now a final word about the lowly man in the "box" or projection room. He usually reports for work at 7 p.m., runs two complete programs of two hours each plus an intermission between programs, and then heads for home about midnight. On Saturdays there is generally a late show starting at midnight and lasting until 2 a.m.

The projectionist most often wears overalls as the accepted costume. When a man works in the fields he dresses as a farmer, and when he runs projectors out in the cornfields he dresses the same as his country cousin. All in all it is about the same as projecting in the city theatre excepting that there is a rustic atmosphere present and this seems to be the greatest attraction of the drive-in theatre.



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VISIBILITY FACTORS

(Continued from page 8)

wide-angled lens for magnifying spectacular scenes in conventional projection, is old-hat in the super-deluxe movie theatres of large American cities. But in 1929 Paramount experimented with 56-mm and 65-mm films, and revamped several German Ernemann projectors for showing the wide films experimentally.

In the same year, Fox tinkered with 70-mm film and produced a picture on this width titled "Happy Days." Exhibited by means of remodelled Super Simplex machines, "Happy Days" mildly amused the patrons of the Carthay Circle Theatre in Los Angeles and the Gaiety Theatre in New York in 1930.

Meantime, George Spoor, Henri Chrétien, and other experimenters were working with cylindrical optics to squeeze wide-angle scenes into regular 35-mm frames and to expand them again at the projection end for wide-screen reproduction. The "modern" CinemaScope is said to be Chrétien's brainchild.

"Happy Days," although favorably reported, did not enjoy anything like Cinerama's present success. It had neither color nor stereosound, and spectacular sequences were absent. Neither was the Grandeur screen curved to "surround" the audience with grandiose, even if distorted, scenery. Had Grandeur's first attempt consisted of a *potpourri* of novelty shots instead of dramatic continuity of an infantile order, it might have anticipated, at least to a slight degree, Cinerama's astonishing ability to hypnotize audiences with spectacular tidbits.

Cinerama vs. True 3-D

It has been stated repeatedly by the uninformed that Cinerama is a 3-D process. Apparently these disseminators of public information never had a grandma who possessed a parlour stereoscope with views of the National Parks and intimate 3-D glimpses of the domestic scene on its risqué side. Stereoscopes were quite the rage even as early as 1895.

Cinerama is not 3-D!

In a true 3-D process, the picture on the screen is a composite of right-eye and left-eye images. One image is plane-polarized at right angles to the plane of polarization of the other. Polaroid spectacles worn by the patrons un-

scramble the composite image and enable each eye to receive the image intended for it, rejecting the other. The picture has real *depth*—the different distances of objects can actually be seen, and the observer feels that he is *in* the picture.

Now, does all this have a familiar ring? It should.

When silent movies were still in their romantic glory, theatre patrons were now and again simply bowled over with *genuine* 3-D movies which had to be looked at through special glasses. For it was in 1925 that the first 3-D novelty reel was filmed by the anaglyph method, wherein colored filters were used to bring to each eye its proper and separate image, blocking off the other. Projection was orthodox—the print itself contained the magic ingredients of stereoscopic realism in its superimposed red and blue-green images. The eye wearing the red filter could see the blue-green picture as a black image, but not the red one—and *vice versa*.

Norling's "Audioscopiks"

In 1935 the anaglyphic 3-D short subjects were resumed with sound under the name "Audioscopiks" (J. A. Norling). Popular as they were, no producer seriously supposed for a moment that audiences would tolerate the eyestrain resulting from viewing a full-length feature film through red and blue-green spectacles.

Polaroid, a marvelous substance indeed, has removed the "visual insult" of the anaglyph, but it has produced headaches aplenty on the projection end. As the process is now constituted, two films must be run at the same time, and the screen images matched.

In 1936 Paramount devised a 3-D process similar to Natural Vision and called it Paravision. Special stereo cameras were constructed, used for filming test sequences, and then laid away to collect dust. Now, 17 years later, the same Paravision cameras have been dusted off and put to work to grind out "new" 3-D films.

Asked why Paravision was not used when first devised, Adolph Zukor, Paramount board chairman, replied that business was good in those days, and Tv has forced the industry to delve into its bag of tricks to meet competition. "The movies cannot afford to stand still. Standing still in show business means retrogression." Mr. Zukor was merely echoing IP.

"Bwana Devil" has not been entirely satisfactory, despite its tremendous house-packing power as a novelty. The picture itself is said to be strictly Grade B-minus. The prints were reported bad, although this writer suspects small errors in superposition to be responsible for the fuzzy focus reported. (This is not the fault of projectionists, for it is impossible to obtain perfect superposition when two projectors 5 or 6 feet apart are used.) Also, realistic stereosound was wanting.

But all these are troubles and deficiencies which are amenable to correction as time goes on. The most important thing about Natural Vision and its sister processes is that they are successfully stereoscopic.

Picture Visibility—Naturalness

Picture-visibility (that is, the "naturalness" of a motion picture combined with the visual comfort with which it can be viewed for protracted periods of time) is of paramount importance in the choice of a picture-reproducing process. How much imperfection will the paying public tolerate in motion pictures, conventional, panoramic, and stereoscopic?

Picture-visibility is one thing in panoramic presentations and something else again in 3-D and conventional movies. All the many factors comprising this elusive but all-important "something" ought to be closely scrutinized by every projectionist concerned with the future of his craft. An attempt to present some of these factors will be made in these columns, beginning with next month's installment of this series.

[TO BE CONTINUED]

Neumade Film Synchronizer

Neumade Products Corp. demonstrated its Synchromaster film splicer at the SMPTE Convention in Los Angeles to show the value of the machine in synchronizing the dual film used in 3-D production.

Useful for all types of film synchronization in projection rooms, studios and laboratories, the Synchromaster machines are available from stock in models with 2, 3 and 4 hubs for 16- and 35-mm film. Other assemblies containing 5, 6 or more hubs can be assembled to order.

Canadian National Film Fair

A Canadian National Film Fair is being planned as a cooperative project by a number of industry groups who will hold their annual meetings in Toronto next October. The Motion Pictures Theatres Association of Ontario has been named to work out plans.

M/Sgt.

Harold E. Wilson, USMCR

Medal of Honor



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OUT OF THE SPRING NIGHT, the Red banzai attack hit like a thunderstorm. The darkness exploded into a nightmare of flaming confusion. But Sergeant Wilson went into action at once, rallying his hard-pressed men.

Bullets wounded his head and leg; disabled both arms. Refusing aid, he crawled, bleeding, from man to man, supplying ammunition, directing fire, helping the wounded.

As the attack grew fiercer, a mortar shell blew him off his feet. Still, dazed

and weakened, he held on, leading the fight all night till the last Red assault was beaten off. At dawn, by sheer courage, the Sergeant had saved not only his position, but the precious lives of his men.

"In Korea," says Sergeant Wilson, "I didn't think about where our weapons came from—I just thanked God they were there.

"Now, back home, I realize what's behind those arms. The united strength of millions of thrifty, hard-working

folks like you—who are making America safer by investing in U.S. Defense Bonds. Maybe you've thought you were just saving money. Believe me, you're saving men's lives, too!"

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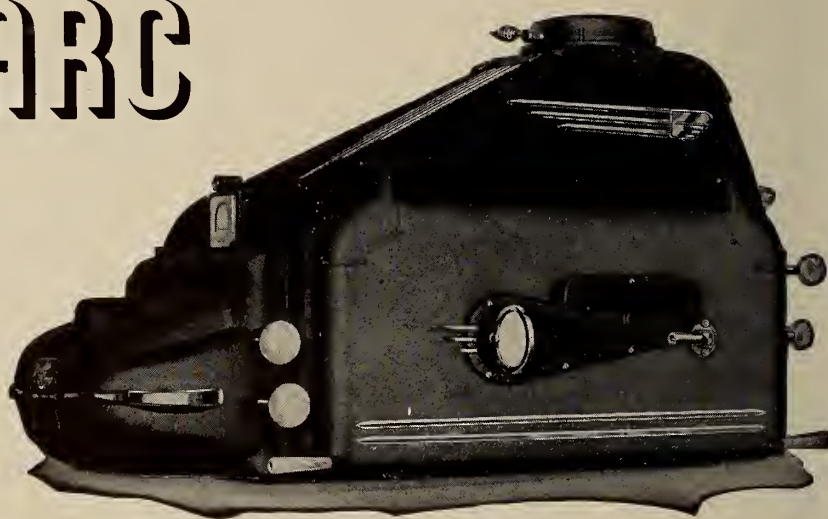
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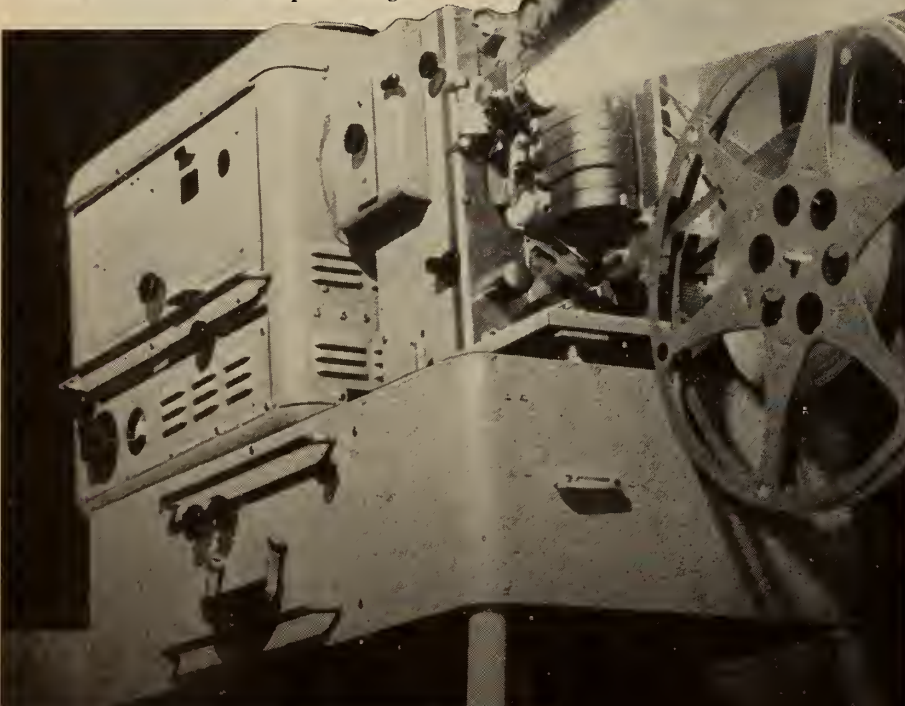
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JAMES J. FINN, *Editor*

Volume 28

JUNE, 1953

Number 6

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MONTHLY CHAT

NOTHING has occurred during the past four weeks to change IP's oft-repeated estimate of the worth of the various "new" processes being offered to the theatre exhibition field. We still adhere to the view that for the majority of theatres an investment of about \$800 tops for a pair of lenses, a new screen and a bit of construction work on the stage area will enable the showing of anything that hoves into view. This excludes the 20th-Fox CinemaScope process, but since this is strictly a wide-screen proposition, a couple of wide-angle lenses and proper screen masking (or a screen surround) will give a comparable effect.

The controlling factor in all installations is the physical aspect of a given theatre.

How many theatres can accommodate a screen width of 60, 50 or 40 feet? We'll wager that the *average* for most theatres will be about 30 feet. So, why do we need special lenses at great cost when all that is needed are a couple of standard wide-angle lenses? Does anybody believe that 20th-Fox will shoot exclusively in the CinemaScope process? If so, how many customers will they have among the bulk of theatres when the dust settles down?

These considerations lead naturally to an estimate of stereophonic sound. Thus far the process has been grossly mis-handled, mainly because the so-called stereo sound effect is just that and no more, the extra tracks carrying only additional effects for pictures which were shot almost two years ago. What will stereo sound add to a 30-foot picture. The horns required will just fit behind a 30-foot screen. And is there a directional impact from left- and right-hand screen sides with a 30-foot screen.

Paramount has just issued a 5-page directive for projectionists intended to overcome "projection deficiencies" which are causing "unfavorable audience reaction." This seems to us the veriest nonsense, because after we comply to the dot with the line-up directives, why do we still have to frame constantly? The fault lies in the *taking* not the *showing* of 3-D pictures.

A WORD OF CAUTION: beware of these inclusive "package" deals now being blithely offered. First, the buyer will probably get not only *more* equipment than he needs and, possibly, the wrong kind. The extreme shortage of lenses will flatten many of these "packages" into an empty paper bag.

Don't forget: any good screen image must be not only *wide* but *high* (and if in color, *handsome*). We still like the 1.85 to 1 (or even 1.75 to 1) ratio.

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JUNE 1953

Wide-Screen Single-Film 3-D Predicted

Appended hereto are excerpts from a paper presented recently before a distinguished scientific organization by John A. Norling, whose accomplishments in the stereoscopic motion picture field have won world-wide acclaim. Mr. Norling has contributed profusely to the technical literature on the art, including articles which appeared in IP during the past 20 years.

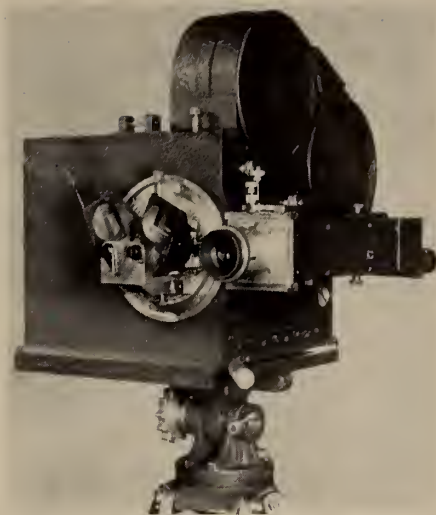
"THE FULL possibilities of 3-D have not been explored," John A. Norling told 400 optometrists at the recent Central Atlantic Optometric Assembly in Atlantic City. "We look forward to wide-screen 3-D as an early embellishment of the art," predicted Mr. Norling, chairman of the Stereoscopic Motion Picture Committee of the SMPTE, "and to the eventual wedding of binaural sound with wide 3-D"

Shown in full color, 3-D pictures carry naturalness to a point where the illusion is substantially complete and observers are likely to lose all sense of looking at pictures, said Mr. Norling, "provided the 3-D presentations do not contain *depth distortions* and exhibit other technical faults."

Limits of Binocular Vision

Any sensation of visual discomfort in viewing stereo movies is the penalty for exceeding certain geometric limitations imposed by Nature upon the use of our two eyes simultaneously, Mr. Norling explained. "Its cause is cumulative and lies in the breaking of one or more of a few exceedingly simple rules."

The cine-stereo expert continued: "Complete visual comfort can be attained in stereo movies only if the two images are projected simultaneously, if they are rock-steady, if they are of equal brightness, if they are of equal



This is the first integrated 3-D camera as developed by J. A. Norling, as contrasted with the double-unit cameras which were hastily assembled and pressed into service for the first 3-D pictures. The Norling camera is unique in that it is the only one that permits variable interaxial spacing of from 1½ to 4 inches.

A micrometer knob mounted between the lenses enables the cameraman to quickly adjust convergence. The single camera body compactly accommodates two film strips and handles as easily as a conventional camera, for extreme flexibility.

contrast, if far distant points are not separated too far in one image from that of the other, and if they are of exactly the same size."

Requirements for Good 3-D

Mr. Norling discussed and demonstrated with stereo slides how 3-D films are made and projected so as not to exceed the tolerance of visual functions. In his opinion, good 3-D depends on:

1. Using lenses closely matched in focal length to limit differences in image sizes to one half of one %; or one inch difference in height size between two superposed images on a 18 by 25 foot screen.
2. Vertical alignment: one image should not be higher or lower than the other.
3. Rotation: two images should be in accurate attitude alignment.
4. Illumination negatives should be matched in contrast and density. The depth effect disappears and visual discomfort ensues when one image is darker in projection.
5. Normal depth and appearance of objects and people.
6. The use of a "stereoscopic window"—that imaginary portal through which the projected picture is viewed—is another requirement of good 3-D presentations. To form the "window," 3-D cameras must have a means of

converging the lens axis to any desired plane, usually to a plane in front of the nearest object.

Improper Camera Techniques

Improper photographic techniques, usually wrong interaxial spacing (distance apart) of the camera lenses, results in "misinterpretation." This means observer confusion about spatial relationships, sizes of objects and shapes of persons. Deeper-than-normal scenes and strange forms of well-known objects conflict with the audience's experience.

Proper interaxial spacing is calculated for the ultimate size of the projected picture. Example: a linear magnification of about 360 times is the determining factor for a standard 25 foot screen.

Too large interaxial spacing will cause the picture to suffer from "miniaturization." Objects and people will look smaller than they should, and the depth of the scene will be abnormally increased in relation to the real spacing of objects.

Too small interaxial spacing causes "giantism"; people and objects appear too large, and depth becomes drastically reduced.

Mr. Norling discussed the features of all the cine-stereo cameras now in use; 3-D projection; dual images on one film; the anamorphoser lens system; the beam splitter; sequential frame projection; improved single-film systems;

free-vision 3-D: the grid system; and the possibilities of stereoscopic motion pictures.

In speaking of 3-D developments, Mr. Norling revealed that the "stereoscopic window" was not a necessity "if certain 3-D photographic and projection procedures are employed. It is perfectly possible to have 3-D pictures existing in space whose margins are vignettted, gradually shaded off from outer darkness to the full illumination of the picture itself. Some optical problems exist in the methods of doing this, but they are not very difficult to solve."

The pioneer 3-D producer and designer of the cine-stereo camera bearing his name asserted: "Whatever the course of development of the 3-D art, one thing is certain: All the fundamental rules applying to proper photography and projection must be observed. Infraction of any one of these rules may set up visual disturbances; may give the audience an unpleasant experience."

Mr. Norling voiced his own opinion and that of the SMPTE when he concluded: "3-D cannot afford to break even one of the simple rules for producing and projecting good stereoscopic motion pictures."

Those who are interested in a detailed description of several proposed methods of getting the two stereo images on one film should refer to the August, 1951, and February, 1952, issues of IP where Mr. Norling discusses the anamorphoser lens system, the beam splitter, sequential-frame projection, the grid system and various other methods of single-film stereo projection.

3-D As Viewed From Olympus

RECENTLY in the know-all-and-yet-know-nothing citadel of culture known as Hollywood, Calif., there appeared before the Motion Picture Industry Council a Mr. M. L. Gunzberg, president of Natural Vision Corp., the sponsors of the process which is responsible for various 3-D Motion pictures now available in various theatres in the United States and elsewhere.

Mr. Gunzberg, whose contributions to the technology of motion pictures have been widely publicized, seized the aforementioned occasion to divest himself of some rather extraordinary comment relative to the "principles" behind his Natural Vision process, including the reliance upon "convergence" rather than the "variable interocular" method used in "other 3-D systems."

As reported in *Motion Picture Herald* (May 9 issue) Mr. Gunzberg's thought processes are as follows:

"Normally, the eye doesn't stare straight ahead—as do the cameras in the variable inter-ocular method of shooting. In normal vision, the eyes converge on the subject that a person is looking at—and the area of vision is more or less concentrated. The cameras

used in the Natural Vision method of shooting are set up so that they provide a natural convergence on the subject of greatest interest—just as the eye has a natural convergence.

"To our knowledge, ours is the only 3-D system which has developed and emphasized 'convergence' and all the accompanying physiological and psychological factors."

He recognized that there had been some complaints of eyestrain in connection with films utilizing the Natural Vision process, but contended they stemmed from inadequacies in projection or in unrecognized eye defects. On the whole, he declared, viewing properly photographed and projected 3-D films is excellent therapy for the eyes and adds to the general audience enjoyment of a motion picture.

As to cries for "standardization," he pointed out that all 3-D films are projected on the same types of projectors, with reels of identical size—that complete standardization virtually exists as to films using the "stereo" method.

A Commonplace of the Art

Gunzberg's assertion that the Natural Vision 3-D cameras are the only ones that employ convergence is totally unfounded in fact. He further distorted

the truth when he states that cameras employing variable interaxial shoot straight ahead and do not employ convergence. Actually, convergence as well as variable interaxial has been employed by Spottiswoode and Norling.

Spottiswoode described his principles of convergence in the *SMPTE Journal* for October, 1952. Norling has upon numerous occasions described his employment of both convergence and interaxial spacing control, both of which he has used since 1936.

Gunzberg's statement that his 3-D system is the only one that has developed an emphasis on convergence and all the accompanying physiological and psychological factors will come as a surprise to all those who have had any experience in cinestereography.

Eyestrain is Fact, Not Fancy

Actually, complaints of eyestrain in connection with films utilizing the Natural Vision process is set up not only by inadequacies in projection but also in the faulty techniques notoriously used in the Hollywood "show-off" utilization of the 3-D process.

See the statement by Dr. Leslie Knopp, president of the British Kinetograph Society, which appeared in the IP story anent the recent SMPTE convention (page 18, IP, May 1953).

— JAMES J. FINN



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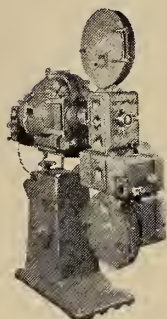
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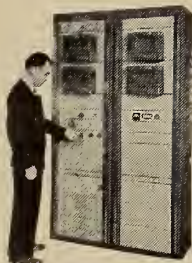
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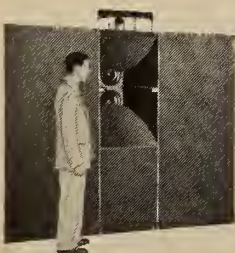
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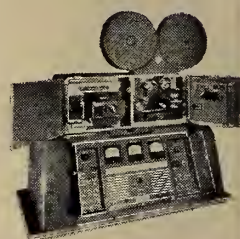


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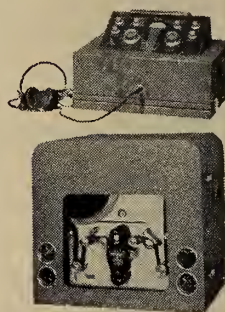


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Visibility Factors in Projection

2. Light Problems of 3-D and Panorama

NATURALNESS and lifelikeness in conventional theatre movies are of a high order, but nevertheless restricted by screen area, 2-dimensional pictorial reproduction, a film speed too low to permit the smoothest delineation of motion, and an intermittent pull-down speed too slow to overcome the effects of shutter-flicker at high light levels. In addition, ordinary movies are handicapped aurally by unidirectional sound—emanating at all times from the middle of the screen.

Despite these limitations, conventional movies are much easier on the eyes than any of the current panoramic and stereoscopic presentations. They do not induce eyestrain in persons of normal vision even when viewed from positions close to the screen for long periods of time. Much of this excellence is due to the untiring efforts of the projectionist.

Rapid Motion 'Jumpiness'

Direct-camera, or "live", Tv does indeed permit a smoother and less "jumpy" delineation of rapid motion than does the 24-frame per second motion picture. This is because Tv's 30 interlaced field-scannings per second are virtually equivalent to 60 frames per second. But no one dares risk his neck by declaring that Tv is less rough on the eyes than regular movies. A Tv image has comparatively low definition, is subject to many kinds of visual "static" and transient distortions, has a harsh violet-white glare, may bombard the eyes with invisible high-frequency rays.

Panoramic and stereoscopic pictures may induce severe visual fatigue because of characteristics inherent in such processes. Polarized-light 3-D, for example, is hard on the eyes when the "successive-frame" system is used—one frame visible only to the right eye, the next frame to the left eye, the third to the right eye, etc.

Causes of 3-D Eyestrain

When the right and left images are projected simultaneously, it is tiring to watch if the stereo pairs are not properly superimposed and maintained in correct registration. (Slight vertical

By **ROBERT A. MITCHELL**

misalignment will give the effect of a blurry picture until the muscles of one eye have been strained to accommodate the incorrect configuration. This causes mild eyestrain.)

Now, can that intangible "something" called *picture-visibility* be taken apart and broken up into separate factors for evaluation? Such an analysis should be advantageous.

The size of the screen may be taken as an elemental, if elementary, factor of picture-visibility. It is undeniably a significant factor at the present time, for the proponents of panoramic projection would greatly enlarge our screens. In Cinerama and CinemaScope projection, the screen is not only widened, but also curved.

How Big a Screen?

As we stop to consider the visual effects of a wide, curved screen, however, a number of related, but different, picture-visibility factors come to mind. The *shape* of the picture, for instance. Would it be a mistake to alter the time-tested and eminently serviceable 4 by 3 proportion of the screen? Or suppose that a single film is used for the panoramic projection, as in CinemaScope. Will the picture be *bright* enough, *clear* enough? And if the proposed screen be curved, will *perspective-distortion* spoil the appearance of the picture for patrons seated outside of a very small optimum viewing-space?

Well for us, then, to consider all of these and other picture-visibility factors, heading the list with "size of picture."

SIZE OF PICTURE

If a screen be too small in relation to the size of the auditorium, audiences will be too far removed from the picture to obtain a feeling of emotional participation in the drama. The small picture will be hard to see, and much of the pictorial detail will be invisible.

If, on the other hand, the screen be too large, patrons will not see the forest for the trees—closeups will reveal beauty-spots, but no beauty. Action

sweeping in all directions over an *enormous* screen requires excessive activity of the eye-muscles to follow it. Visual fatigue results. And the effectiveness of long-shots is lost because the screen cannot be "taken in" at a glance.

Film Grain Magnified

Equally as important is the fact that photographic and projection defects are magnified *in the same proportion as the picture itself*. Emulsion graininess, camera, printer, and projector unsteadiness, and the inherent jerkiness of objects in rapid motion become objectionable faults when the picture is too big for the auditorium in which it is shown. Big screens necessitate lenses of shorter focal length: *focus becomes exceedingly critical*, and film-flutter and buckling more prominent.

Then too, the eye is "drowned" in the flickering light of the oversize picture; this contributes to eyestrain. All movies flicker to some extent because photographic development of the film is never absolutely uniform, and also because moving objects in the picture constantly vary the amount of light reflected to the eyes by the screen. This is one of the reasons why most people avoid the front seats.

There are other objections to super-colossal screens. The problem of supplying adequate illumination to a large screen is serious, and shutter-flicker of the standard 48-cycles per second frequency is highly visible to the peripheral areas of vision (that is, the action of the rotating projector shutter can be perceived from "the corner of the eye" more readily than in the center of the field of vision—and giant screens require wide visual angles).

Not all of these objections apply to special wide-screen processes, such as Cinerama. Because Cinerama employs three conjoined projected images, emulsion graininess, focus difficulties, film-flutter, and illumination deficiencies do not arise as serious problems. And the scenes are all long-shots. Peripheral flicker is slightly reduced in Cinerama by a film speed of 26 frames per second, resulting in a cutoff-frequency of 52 cycles per second.

CinemaScope's Problems

In the case of CinemaScope, however, the objections are all the more

serious because the size of the film-frames is the same as in ordinary 35-mm projection. The wide image is "compressed" into the frames by means of cylindrical lenses. As for the effects of emulsion-graininess and poor focus in CinemaScope, vertical lines are more blurry than horizontal lines! Because CinemaScope is illuminated by only one arc, adequate lighting poses a tough problem.

The 35-mm film-frame can take only so much light and heat, and the limit seems to have been reached already in the larger theatres and in drive-ins. CinemaScope film-speed is standard, but lower picture-brilliance will mask peripheral flicker.

As a rule, the width of the *conventional* 4 by 3-proportioned screen should not be less than 1/6th nor more than 1/4th the distance from the middle of the screen to the farthest row of seats. Thus the screen in a theatre having a maximum viewing distance of 80 feet should be from 13 to 20 feet wide. Panoramic wide-screen setups increase screen-width approximately 2½ times.

SHAPE OF PICTURE

The least "arbitrary" shapes that a picture can have is the circular form. Experience has shown, however, that for some obscure psycho-visual reason, a perfectly round screen is highly unsatisfactory. The earliest Tv picture-tubes were round. Even present-day Tv screens, having bowed edges, are unsatisfactory. We do not know why most people prefer pictures bounded by straight lines, but the fact remains that they do.

The square is the simplest geometrical figure bounded by four straight lines. In the early days of sound pictures, the standard silent-film projector apertures were used, the sound track being concealed by a sliding mask. This resulted in a nearly square screen image. No one liked a picture of that shape, so the old 4 by 3 width-to-height ratio of the rectangular silent aperture was restored by reducing the height of the frames. It is interesting to note that approximately 6 feet of film in every 1000-foot reel is wasted by the increased thickness of the frame-lines.

Nature is Panoramic

Why is a horizontal, rectangular screen-picture preferred to a square one? For one thing, the natural field of vision of our eyes can take in a wider angle horizontally than vertically. Most

action takes place in the horizontal, rather than in the vertical, plane. Most of the scenes in nature are panoramic, having a pictorial axis parallel to the horizon and perpendicular to the earth's gravitational pull. In the final analysis, therefore, the law of gravity is responsible for our horizontal, rectangular screens!

The "esthetic" desirability of the 4 by 3 proportion is nothing more than a utilitarian compromise between the visual "framing" of natural landscapes and the preponderance of horizontal movement, on the one hand, and scenes of persons standing upright, on the other. An actor, or even two or three in a group, appears lost on a movie screen 2½ times wider than high.

How are visual and dramatic centers of interest to be focused on a screen that "surrounds" the audience? The close-up is one of the most useful photoplay techniques ever devised. Panoramic screens cannot employ the close-up without appearing clumsy. Ingenious panoramic-film cinematographers must devise a workable substitute for it.

BRIGHTNESS

According to present-day standards of projection illumination and print density, a picture is deemed suitably

brilliant if the screen has at least 15 footlamberts of brightness when illuminated by a running, unthreaded projector. (The brightness is reduced to only 1½ or 2 footlamberts as an overall average by the film when pictures are projected.)

Taking 0.8 as the reflectance of the screen, the intensity of the projected light at the screen (projector running, but without film) must be 18.75 foot-candles in order to provide a brightness of 15 footlamberts. The amount of luminous flux pouring from the projection lens depends, of course, on the area of the screen. In the case of a screen 20 by 15 feet illuminated by 18.75 foot-candles, 5,625 lumens of light flow from the lens, regardless of the length of throw.

15-Footlambert Standard

If screen brightness be below 15 footlamberts, the darker gray tones in the picture will all be black, and hence become indistinguishable from one another. This means that pictorial detail in the shadows will be lost in murky gloom. Not only this, but the high-lights will lack crisp brilliance. Any picture not adequately illuminated looks very insipid and induces eye-strain. The public has become so accustomed to extra-bright Tv images
(Continued on page 30)

HOW CONVERGENCE MAKES OBJECTS 'LEAP' FROM SCREEN

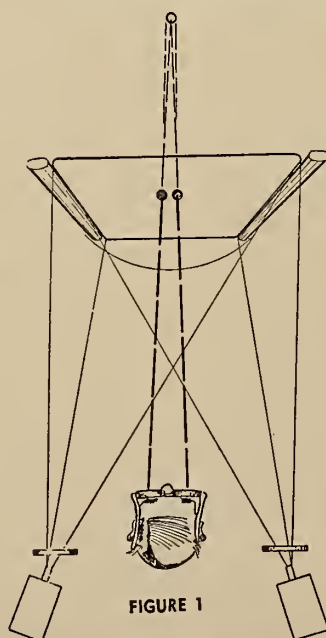


FIGURE 1

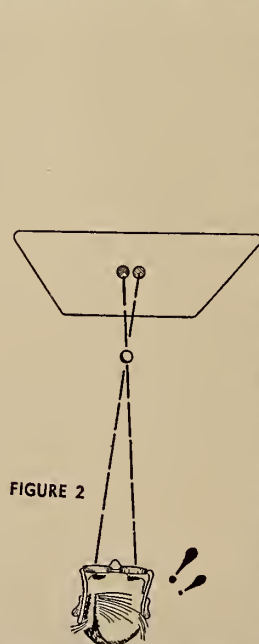


FIGURE 2

For those who may wonder just how 3-D cameramen obtain the startling effect that make objects seem to jump out of the screen and land practically in the viewer's lap, the accompanying drawings offer an explanation. In the 3-D "House of Wax" now playing around the country, there is a sequence where a sideshow barker bats a rubber ball attached to an elastic in such a way that it appears to leave the screen and almost knock the Polaroid glasses off the audience. In Fig. 1 we see that the left and right stereo images are placed on the screen in such a way that the viewer's eyes interpret them as a single image far behind the screen. The "leaping out" effect in Fig. 2 is obtained by converging the camera lens at a point much closer to the viewer than the objects on the same plane as the screen, with left and right images crossing over each other on the screen. While its shock value makes quite an impression on the audience, this effect must be used sparingly because of the eyestrain it can cause when misused.

Now Available

VERSATILE RCA SOUND HEAD

adaptable for magnetic—photographic—standard

To keep pace with today's new methods in sound presentation, RCA engineers have designed a sound head so versatile it can be adapted for use with virtually all currently proposed sound-on-film techniques.

With this latest sound head, you'll be ready to show, to their best advantage, the finest

of the new film attractions whether they be 3-D, or standard; stereophonic, or single-track film. Yes, if you buy RCA's latest sound head, you will be prepared, through an equipment adaptation, to provide your patrons with quality sound reproduction for any of these film recording methods:

- **3-D conventional photographic sound track**
- **3-D stereophonic triple magnetic sound track**
- **2-D conventional photographic sound track**
- **Sound effects track**

Best of all, you'll be getting a sound head designed for rugged day-in and day-out theatre operation. You'll be assured of true equipment economy—long life with negligible maintenance expense and readily available replacement parts when necessary. Furthermore, you can arrange for dependable service from the RCA Service Company. Make sure your show has uninterrupted

sound—protect yourself by buying the latest RCA sound head.

• • •

Ask your RCA Dealer also about the new theatre sound system RCA is readying for the latest film techniques—brilliant, new speakers, new amplifiers of greatly advanced design, powerful auditorium speaker units.

HERE'S NEWS FOR USERS OF LATE-MODEL RCA SOUND HEADS

RCA is now making available in kit form the apparatus which will enable you to convert your late-model RCA sound head right on the spot. Your RCA Dealer can tell you about fast, low-cost conversion.

KEEP IN TOUCH WITH YOUR RCA DEALER FOR FURTHER DEVELOPMENTS IN RCA SOUND

A new era in fidelity and versatility in sound is on its way from RCA. Keep in touch with your RCA Dealer for information on availability.



THEATRE EQUIPMENT

RADIO CORPORATION of AMERICA

ENGINEERING PRODUCTS DEPARTMENT, CAMDEN, N.J.

In Canada: R C A VICTOR Company Limited, Montreal

The 'Hypergonar' Lens Process

THE NORMAL field of natural vision is much more extended in width than in height; this follows because the visual field of the two eyes are co-extensive one with the other.

This is fortunately compatible with the most common aspect ratio of objects which we see; the enlarged scope of landscapes in a vertical direction is more rare, and the head movements in the vertical direction are less spontaneous than the horizontal movements.

Compromise Aspect Ratio

Ever since the beginning of motion pictures the aspect ratio of the screen has been a compromise between these two directions. For ordinary photography where one can, by convenient arrangement of the apparatus on its support, take pictures whether it be in height or in width, the manufacturers have been constrained to adopt as format for the plates a ratio which is unchanged when one cuts the plate in half; theoretically this ratio will be the square root of 2×1 , or 1.414 , which is closely enough approximated by the succession of sizes 18×24 , 13×18 , 9×12 , $6\frac{1}{2} \times 9$, $4\frac{1}{2} \times 6$, etc.

Panoramic Photography

Besides the aspect ratio framing the pictures there is still posed the question of field of view.

Eastman Kodak Co. has put at the disposal of amateurs apparatus which realizes this process. As to field of vision, the value of 150° is attained. In these cameras the film unrolls and rolls back in a narrow plane in proportion to the rotation of the objective.

Somewhere else it has been tried to record panoramas with ordinary cameras with flat plates by displacing the camera in a discontinuous manner and by changing the plate with each displacement.

This process has the inconvenience of presenting a polygonal panoramic field. The scale of the images changes periodically between each setover, at the center of the plate and the edge. Nevertheless, if the consecutive fields are well joined, one obtains panoramas of the most beautiful effect.

Projection Difficulties

In projection, the joining of the successive panorama fragments offers some difficulties. First, it is necessary that the light intensity be the same, and stays the same, during the course of projecting, which is hard enough to attain. Furthermore, it is necessary to watch constantly over the accurate joining of the images

Here in his own words Prof. Henri Chretien explains his "Hypergonar" lens process which is used for both the taking and the projection of 20th Century-Fox's CinemaScope system of wide-screen pictures, as culled from a paper he delivered before the Congress Technique International (Paris) in Sept. 1951.

which is liable to be destroyed by the effects of temperature in the projectors.

One may minimize these two defects, or at least one may take the opportunity to modify the edges of the fields for the purpose of correction, without discomfort to the spectators, by letting them encroach one upon the other, the parts common to the successive fields being toned down toward their border in such a way that the total light across the two superimposed marginal regions stays constant.

The Hypergonar Process

What does a photographer do when he wishes to include a larger field of view in his plate? He chooses a shorter focal length objective, but then he encumbers his field in the dimension of height with a larger expanse of sky or of foreground.

The ideal solution would be to have an objective of which the focal length would be for example half the focal length in the horizontal direction as in the vertical direction, or *vice versa*. This solution would appear to be, *a priori*, a geometric impossibility. Let us examine, however, all the implications. The images which would be produced by such an objective would be anamorphosed reproduction of

the object with two different dimensional scales, one for the height, one for width.

Here let us recall the mirrors which we see in the amusement parks where our own reflection is foreshortened or lengthened according to the direction of the mirror curvature.

Restoration of Image

The procedure proposed here is of the same kind. We can see immediately the advantages of recording on film under conditions of their restoration on the screen such images extended in width or even in height.

But is it possible to build efficiently optical equipment corresponding to this program?

In deforming mirrors the useful opening of the viewing instrument, which is the pupil of the eye, is only a few millimeters, which makes the image quality that these mirrors give seem of sufficiently good quality. But if one wanted to photograph them with lenses of large opening such as are required for motion picture photography, we would see that they are subject to all sorts of intolerable defects, particularly astigmatism.

It is thus necessary to study special optical systems in order to achieve the precision required by images capable of the enormous enlargement on motion picture screens. . . .

Theory of the Hypergonar

All the difficulty stems from the fact that, by necessity, in order to obtain real images we must introduce into the system at least one cylindrical lens crossed with respect to the others from which there results in the aberrations formula very important terms of the second order which cannot be compensated.

The only method of escape then is the following: to employ only cylindrical lenses whose generatrices are all parallel. [*Generatrices*: line points or figures which generate or produce other figures by their motion.]

But then we must renounce the ability to obtain real images. As the light rays are propagated in the plane passing through the generatrices are not deviated (except a fraction of the thickness of the lenses), the rays emanate from the same object point which are propagated ac-

THIS WE'LL HAVE TO SEE



20th-Century Fox purposes taking these tracks off by means of a magnetic reproducing head. When they have accomplished this feat (including wear on the film itself and the reproducing head), many ears will be flapping to hear how it will be done.

cording to an orthogonal plot which also commences on the point object itself.

There remains, then, in order to record it on the photographic film only that the image be made real by means of an ordinary objective placed at the point of the virtual image, that is to say, at the same distance as the object.

Such is the principle on which rests the Hypergonar.

Description of the Hypergonar

Hypergonars are of two types: for picture taking, and for projection. They differ only in their dimensions and their mountings.

From the optical point of view, they consist of two separately achromatized systems: a converging system consisting of two lenses, cemented together, and a diverging system consisting of three lenses, cemented together.

In the case of taking pictures, focusing is accomplished in accordance with the distance of the subject, by means of a spiral shaped shaft and the help of a distance calibration. This does not alter in the least bit focusing of the camera: one may thus go immediately from taking ordinary pictures to taking panoramic pictures, and *vice versa*.

Projection With Hypergonars

In the case of projection, the Hypergonar is adjusted once and for all in accordance with the distance of the screen, by means of a helical rack and pinion. One projects on the screen a checkerboard pattern formed by white arrows on a black background, vertical and horizontal. One focuses with the projector objective. One inserts the Hypergonar and turns it in such a way as to restore the lines of the checkerboard to the vertical and to the horizontal, respectively. The horizontal lines have retained their fineness.

By turning the pinion of the focusing device of the Hypergonar, one brings the verticals into maximum clearness. The apparatus is adjusted. It has to be stated that the interposition of the Hypergonar does not modify the definition on the screen.

[Ed.'s NOTE: It would seem that the SMPTE test reels would serve admirably this purpose.]

Light Losses?

The loss of light occasioned by the introduction of the anamorphic attachments is insignificant: it is the consecutive interposition of only two supplementary lenses, as each of the two systems of which Hypergonar consists is formed by cemented lenses. In addition, the exterior surfaces of each system are treated with anti-reflection coatings.

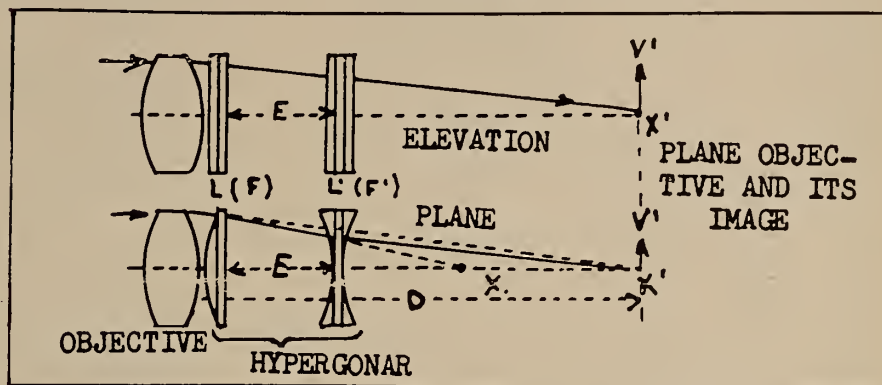
The exposure time is thus not changed in the camera.

In projection, the screen brightness is reduced proportionately to the enlargement of the anamorphic attachment, since one lights a larger surface, and not in proportion to its square (as it would

be the case if the image were enlarged in all directions).

The effect is the same way in regard to the grain of the film, and this advantage is very appreciable.

Sidelights on the Hypergonar Lens



Line drawing reproduction of the Hypergonar lens as presented in *La Technique Cinematographique*. IP's conception of this drawing was submitted to an outstanding authority in the optical arts who offered the following commentary.

ABOVE is a simplified drawing from the French publication, *La Technique Cinematographique* that shows the principle of the Hypergonar lens used in the CinemaScope process. The top figure shows the lens as viewed from the side, while the bottom figure shows the same lens as viewed from above or below.

The diagram illustrates a system made up of three lenses, a standard objective lens backed by two other lenses, each of the latter two made up of a number of cemented segments that embody the Hypergonar principle. Although in actual practice the camera and projection lenses are slightly different, we can assume for the sake of discussion that the lens sys-

tem in the drawing can be used for both purposes.

Viewed from the side, as in the top drawing, we see that the two lenses made up of cemented segments appear flat and do not refract or change the direction of the light rays on the vertical or up-and-down plane after they have passed through the standard objective. Therefore, if the lens is used in a camera, there is no distortion in the elevation of the image when it reaches the film.

How Image Is Compressed

When we view the cemented segments from above or below, as in the bottom (Continued on page 29)

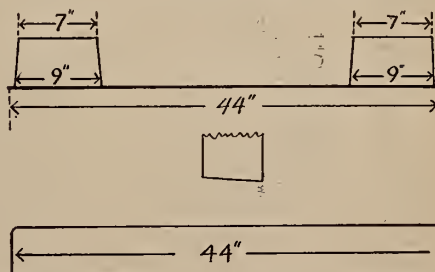
LARGE REEL REWIND SETUP

A bracket arrangement for extending present film rewind equipment to accommodate the new 24-inch reels is offered for consideration. For rewind standards 8 inches high, brackets 5 inches in height are constructed to give a total clearance of 13 inches, which is adequate to handle a 25-inch reel. If rewind standards of different length are used, the height of the brackets is varied accordingly. The brackets are welded to a plate 44 inches long and 4 inches high of 1/4th inch cold rolled steel stock and afterwards dressed to neatness on an emery wheel.

The plate is fastened to the rewind table or bench by four 1/4th inch round-head stove bolts, two at each end near the edges, and one flathead 1/4th inch stove bolt, countersunk, in the center of the plate.

In mounting the rewind standards on these extensions, the spindles face in-

ward, and the rewind mountings must be cut an amount necessary to allow clearance. An adjustment of 3/8ths inches was found to be enough.—HAROLD B. HOBBS, Sec., Local 761, Escondido, Calif.

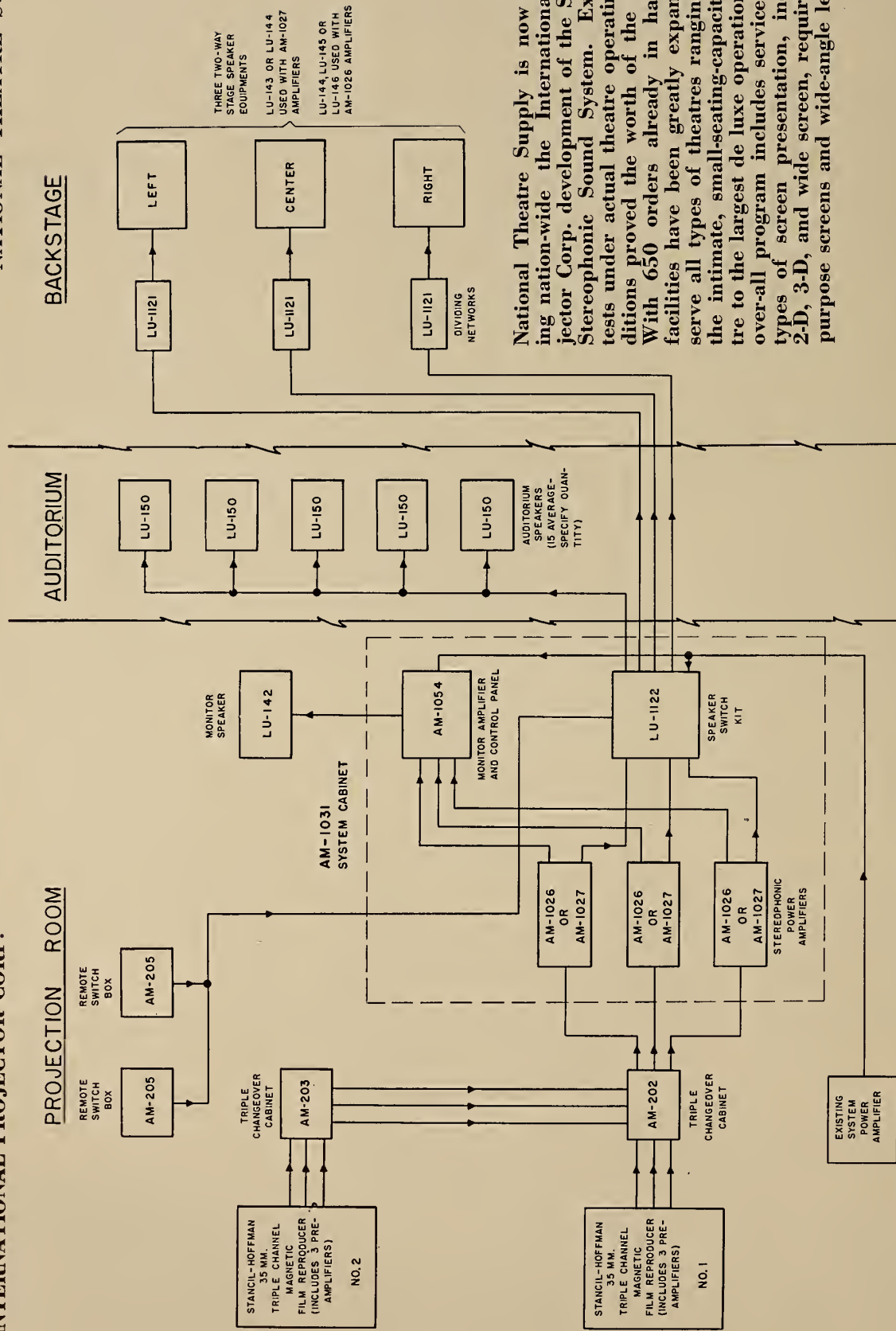


Height of the brackets is determined by the type of rewind used. Center view shows an end view of bracket. The brackets are bevelled 1/4 inch on edge joining the plate, to give proper angle and clearance.

The plate (lower) upon which the brackets are mounted is made of 1/4-inch cold-rolled stock, 4 inches wide.

SIMPLEX STEREOGRAPHIC THEATRE SOUND SYSTEM

INTERNATIONAL PROJECTOR CORP. NATIONAL THEATRE SUPPLY



National Theatre Supply is now installing nation-wide the International Projector Corp. development of the Simplex Stereophonic Sound System. Extensive tests under actual theatre operating conditions proved the worth of the system. With 650 orders already in hand, all facilities have been greatly expanded to serve all types of theatres ranging from the intimate, small-seating-capacity theatre to the largest de luxe operations. The over-all program includes service on all types of screen presentation, including 2-D, 3-D, and wide screen, requiring all-purpose screens and wide-angle lenses.

Sound System Hook-Up Between Projection Room, Auditorium and Backstage Loudspeakers

3-CHANNEL MAGNETIC REPRODUCER

CAPACITY: 5,000 feet of 35-mm magnetic film.
SPEED: 96 perforations per second.
DRIVE: 2-pole, 1,440 rpm interlock motor.
OUTPUT: from 3 pre-amplifiers, 6 milliwatts into 500 ohms.

AM-1054 MONITOR AMPLIFIER AND CONTROL PANEL

SELECTOR SWITCH: provides for individual monitoring of 4 channels, or for channel Nos. 1, 2 and 3 simultaneously.
VOLUME CONTROL: for adjustment of level in

CONTAINS: two pushbuttons and two indicator lights for remote operation of "Stereo" and "Regular" speaker switch LU-1122.

LU-142 MONITOR SPEAKER

DIAMETER: 8 inches; IMPEDANCE: 8 ohms.

LU-150 AUDITORIUM SPEAKER

CHANGEOVER SWITCH: provides for continuous stereo sound, with addition of second reproducer. WARPING: resistance-capacitor network for variable high-frequency roll-off to suit theatre acoustics.

AM-1026 POWER AMPLIFIER

INPUT: 500 ohms (bridging); -20 db., reference 6 milliwatts.
OUTPUT: 8, 16 and 32 ohms; 75 watts.

AM-1027 POWER AMPLIFIER

INPUT: 500 ohms (bridging); -20 db., reference 6 milliwatts.
OUTPUT: 8 and 16 ohms; 25 watts.

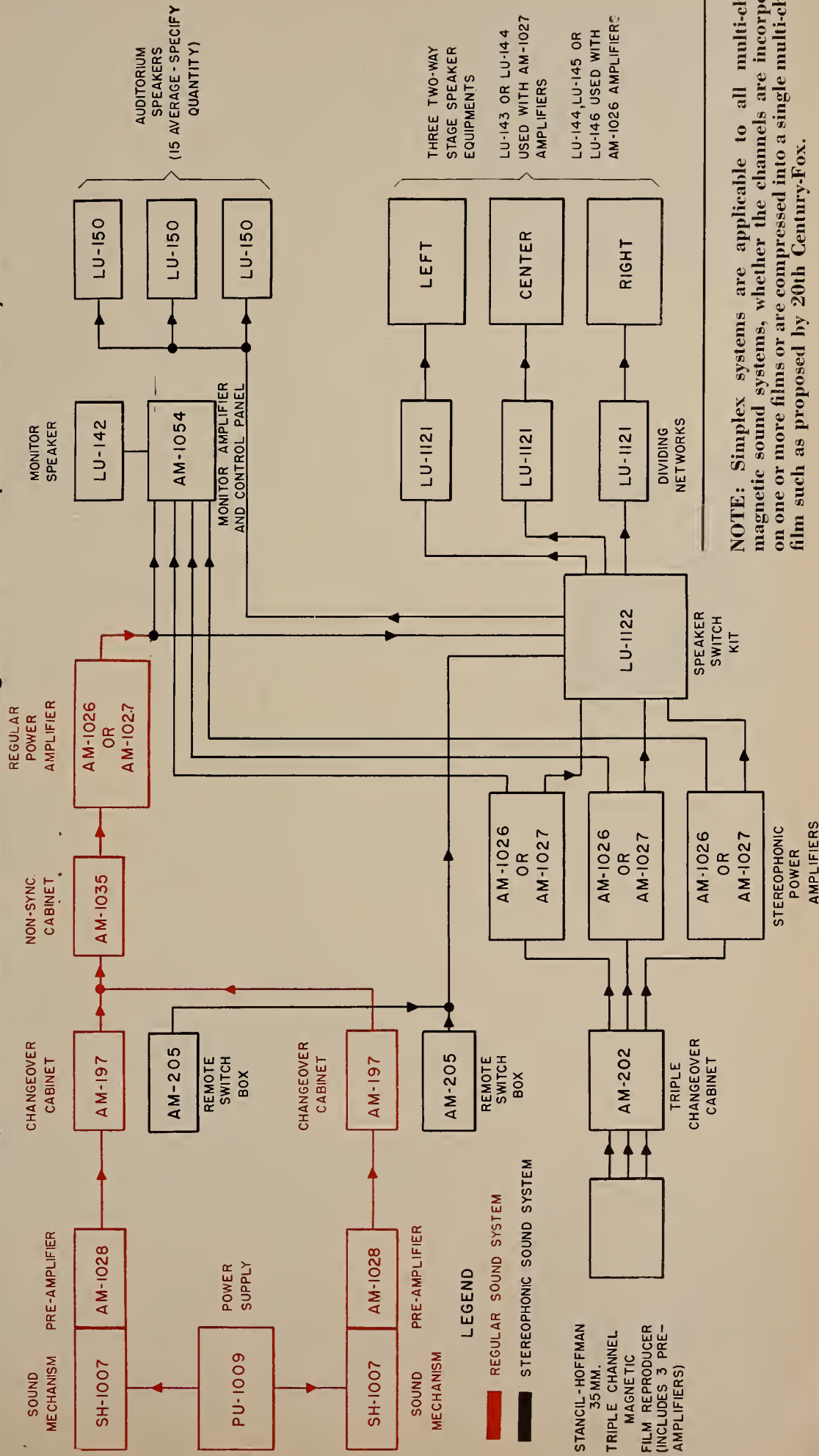
6 volts A.C. impulse-energized. "STEREO" POSITION: Nos. 1, 2 and 3 power amplifiers to the left, the center and the right stage speakers; existing system power amplifier to the auditorium speakers.

"REGULAR" POSITION: Nos. 1, 2 and 3 power amplifiers to the load resistors; existing system power amplifier to center stage speaker. DISTRIBUTION TRANSFORMER: included for 70-volt line distribution to auditorium speakers.

AM-205 REMOTE SWITCH BOX

LOCATION: at operating positions adjacent to existing sound changeover switches.

Showing the Interconnection Between the Regular and Stereophonic Sound Systems



horn stand. CONTAINS: frequency dividing network for matching power amplifier(s) to any combination of stage speakers.

SIMPLEX THEATRE SPEAKERS

LU-143: 1 high-frequency and 1 low-frequency unit.
LU-144: 1 high-frequency and 2 low-frequency units.
LU-145: 2 high-frequency and 2 low-frequency units.
LU-146: 2 high-frequency and 4 low-frequency units.

AM-1031 SYSTEM CABINET

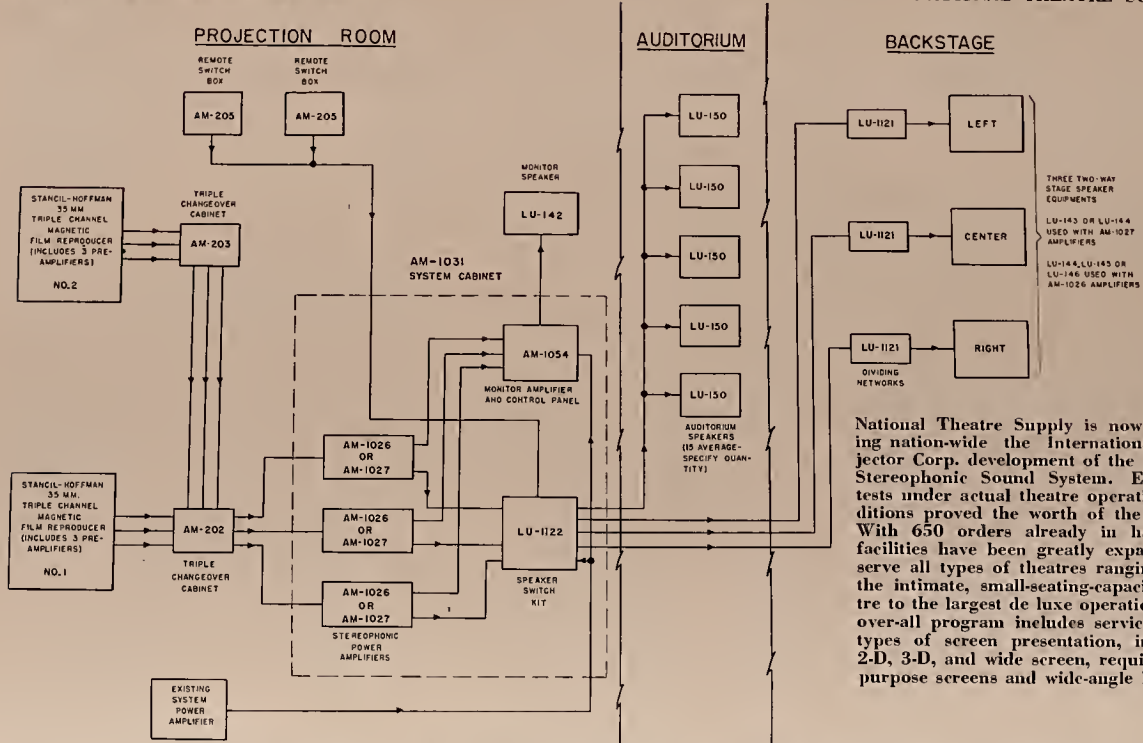
CONTAINS: 3 AM-1026 or AM-1027 power amplifiers; monitor amplifier and control panel; 1 AM-1054 speaker switch; 1 LU-1122.



SIMPLEX STEREOPHONIC THEATRE SOUND SYSTEM

INTERNATIONAL PROJECTOR CORP.

NATIONAL THEATRE SUPPLY



National Theatre Supply is now installing nation-wide the International Projector Corp. development of the Simplex Stereophonic Sound System. Extensive tests under actual theatre operating conditions proved the worth of the system. With 650 orders already in hand, all facilities have been greatly expanded to serve all types of theatres ranging from the intimate, small-seating-capacity theatre to the largest de luxe operations. The over-all program includes service on all types of screen presentation, including 2-D, 3-D, and wide screen, requiring all-purpose screens and wide-angle lenses.

Sound System Hook-Up Between Projection Room, Auditorium and Backstage Loudspeakers

3-CHANNEL MAGNETIC REPRODUCER

CAPACITY: 5,000 feet of 35-mm magnetic film.
SPEED: 96 perforations per second.
DRIVE: 2-pole, 1,440 rpm interlock motor.
OUTPUT: from 3 pre-amplifiers, 6 milliwatts into 500 ohms.

AM-202, 3-CHANNEL CHANGEOVER AND WARPING CABINET

INPUT: 500 ohms (bridging); -20 db, reference 6 milliwatts.
OUTPUT: 8, 16 and 32 ohms; 75 watts.
WARPING: resistance-capacitor network for variable high-frequency roll-off to suit theatre acoustics.

AM-1026 POWER AMPLIFIER

INPUT: 500 ohms (bridging); -20 db, reference 6 milliwatts.
OUTPUT: 8 and 16 ohms; 25 watts.

AM-1027 POWER AMPLIFIER

INPUT: 500 ohms (bridging); -20 db, reference 6 milliwatts.
OUTPUT: 8 and 16 ohms; 25 watts.

AM-1054 MONITOR AMPLIFIER AND CONTROL PANEL

SELECTOR SWITCH: provides for individual monitoring of 1 channel, or for channel Nos. 1, 2 and 3 simultaneously.
VOLUME CONTROL: for adjustment of level in projection room.

REMOTE OPERATION: heavy-duty latching relay, 6 volts A.C. impulse-energized.
"STEREO" POSITION: Nos. 1, 2 and 3 power amplifiers to the left, the center and the right stage speakers; existing system power amplifier to the auditorium speakers.

"REGULAR" POSITION: Nos. 1, 2 and 3 power amplifiers to the load resistors; existing system power amplifier to center stage speaker.
DISTRIBUTION TRANSFORMER: included for 70-volt line distribution to auditorium speakers.

AM-205 REMOTE SWITCH BOX

LOCATION: at operating positions adjacent to existing sound changeover switches.

CONTAINS: two pushbuttons and two indicator lights for remote operation of "Stereo" and "Regular" speaker switch LU-1122.

LU-142 MONITOR SPEAKER

DIAMETER: 8 inches; IMPEDANCE: 8 ohms.

LU-150 AUDITORIUM SPEAKER

DIAMETER: 12 inches; IMPEDANCE: 8 ohms.

LOCATION: mounts on low-frequency stage speaker horn stand.

CONTAINS: frequency dividing network for matching power amplifier(s) to any combination of stage speakers.

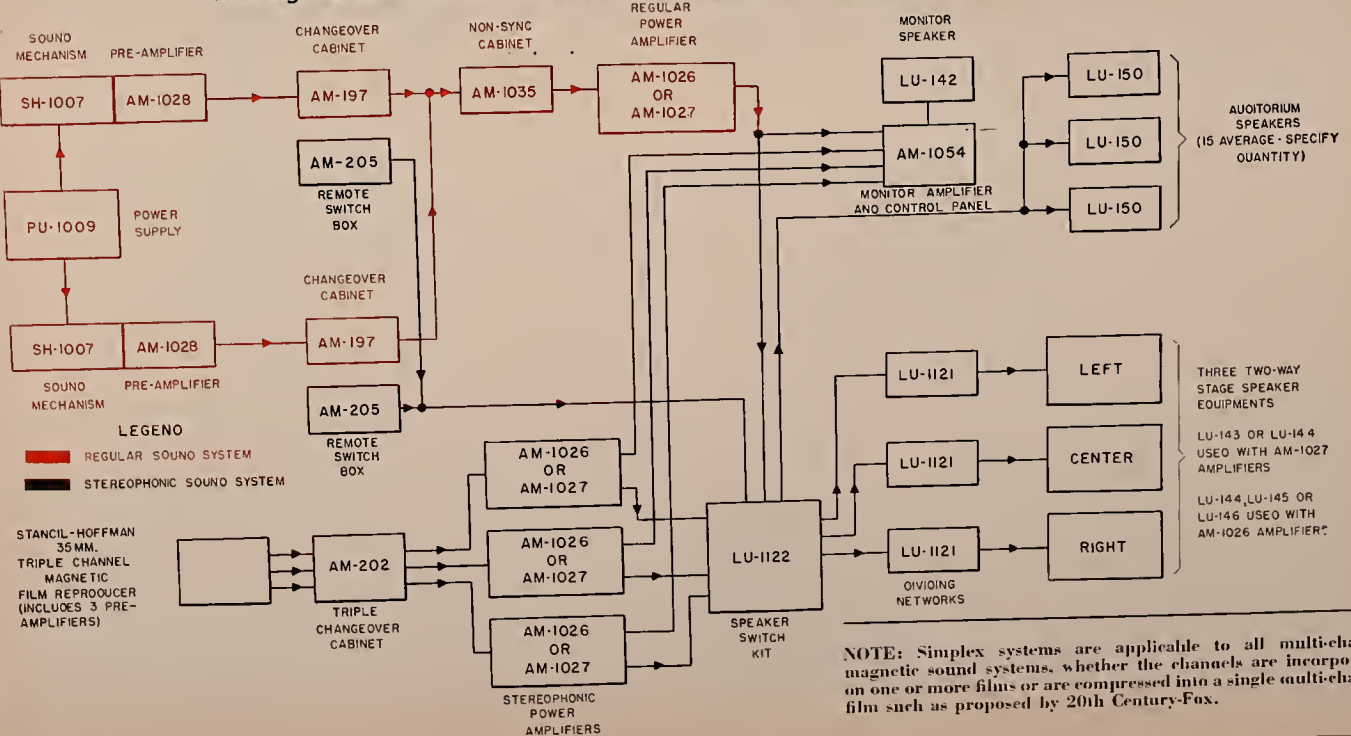
SIMPLEX THEATRE SPEAKERS

LU-143: 1 high-frequency and 1 low-frequency unit.
LU-144: 1 high-frequency and 2 low-frequency units.
LU-145: 2 high-frequency and 2 low-frequency units.
LU-146: 2 high-frequency and 4 low-frequency units.

AM-1031 SYSTEM CABINET

CONTAINS: 3 AM-1026 or AM-1027 power amplifiers; monitor amplifier and control panel; 1 AM-1054 speaker switch; 1 LU-1122.

Showing the Interconnection Between the Regular and Stereophonic Sound Systems



NOTE: Simplex systems are applicable to all multi-channel magnetic sound systems, whether the channels are incorporated on one or more films or are compressed into a single multi-channel film such as proposed by 20th Century-Fox.

IN THE SPOTLIGHT

CONFIRMATION of the settlement of the long-standing dispute about wages and working conditions between Cinerama, Inc. and IA Local 110, Chicago, was forthcoming recently from Cinerama officials. The long-drawn-out negotiations terminated when Cinerama signed a contract which acceded to Local 110's original proposals. The outcome of these nego-



• Eugene Atkinson, Bus. Rep., Chicago Local 110 •

tiations is a tribute to the steadfast resolution of Local 110, as sparked by business manager, Eugene Atkinson, who insisted that Labor should and will participate in any and all benefits stemming from the development of new technological processes.

IP salutes Local 110 for effectuating those policies which IP has long advocated—full participation for Labor in any management gains resulting from technological advances.

- New York Local 306 officials concluded extended negotiations with the New York metropolitan (Loew and RKO) and first-run Broadway houses with a new two-year pact based on an overall 10% increase for the union membership, 8% of which is a direct wage boost, and 2% is added to the Local's employer-participation welfare plan. The new contract became effective June 1 this year and is retroactive to September 1952, when the previous contract expired. Now that Local 306 has pacted the top exhibitor groups, it is expected that the other New York theatre circuits will follow the pattern

established with the Loew & RKO houses.

- Local 843, Las Cruces, New Mexico, celebrated its first anniversary on May 20 last at a dinner-dance held at Vonnies Lee's a popular resort in those parts. Among the out-of-town guests were IA Representative E. J. Miller, of Houston Local 279; E. Earhart, El Paso Local 153, and Meyer Moscow, New York Local 306.

The Las Cruces Local has the distinction of being the only projectionist's organization affiliated with the New Mexico State Federation of Labor.

- Lester B. Isaac, for many years director of visual and sound projection for Loew's, Inc., has been appointed director of exhibition for Cinerama, Inc.

- Various new presentation processes, including all 3-D and wide-screen processes to date, were subjected to extensive discussion and intensive study, supplemented by actual demonstrations, during the joint two-day meeting last month of California District Council No. 2 and of IA District No. 2 (the latter organization includes the states of Arizona and Nevada).

Under the chairmanship of Merle Chamberlin, projection chief at M-G-M Studios, the delegates first went to the Hollywood Cinerama Theatre where the Cinerama process was viewed and discussed. Then the scene shifted to the M-G-M Studios, where lunch was served on Stage 16 and several new 3-D and wide-screen pictures were shown, including shots from "Young Bess," "Take the High Ground," "Fort Bravo," and "Kiss Me Kate." Universal showed scenes from "It Came From Outer Space"; Warner Bros. exhibited scenes from "Charge at Feather River", and Walt Disney offered scenes from his first 3-D cartoon "Melody."

Equipment and processes were the

only topics considered at the sessions, there being no discussion of wages and manpower.

A number of important industry personalities attended the various sessions, including IA President Richard F. Walsh; Dore Schary, production chief, and L. K. Sidney of M-G-M Studios; Loren Ryder, technical director for Paramount; IA representatives Roy Brewer, Steve Newman, and Carl Cooper. Also present at the sessions were three leading members of the Mexican film industry: Ishmael Rodriquez, producer-director; Luis Sanchez Tello, Mexican Film Technicians Union, and Jose Carlos, sound engineer.

Loren Ryder told the delegates that if he were a theatre owner he would first of all equip his theatre with as large and as wide a screen as possible. "Then," he continued, "I would be ready to offer pictures in any wide-screen ratio and still be able to present past product." (IP has been harping on this course for months.)

Richly merited praise was ladled out to Merle Chamberlin for his swell handling of the difficult arrangements job. Unanimous opinion of all delegates was that the sessions were highly successful, and that similar meetings could be held all over the country with great benefit to all IA units. The boys were wondering not a little why they never thought of such a program long ere now on other technical developments within the industry.

- An exchange of correspondence with an American "projection pen pal" is sought by one of our foreign subscribers, Mr. Tomezo Totsu, 7 Suwagawara, Ronakano, Hachinohe-City, Aomori-pref., Japan. Mr. Totsue has sent this publication some very interesting notes on projection in Japan which we plan to print in a subsequent issue, and he is most anxious to communicate with projectionists in our part of the world.

- Prentiss E. Flowers, charter member and former business representative of Local 400, Alexandria, La., is recuperating at home after spending several months at a local hospital where he underwent treatment for a complication of ailments.

- The Missouri State Organization, IATSE, held its semi-annual meeting on May 17 last at the Colonial Hotel in Springfield, Mo. Springfield Locals

137 and 447 were hosts at a luncheon given in honor of the delegates and visitors to the meeting. N. Dudley McCann, secretary of Local 447, was chairman in charge of all arrangements for the one-day conference.

Highlights of the meeting were addresses by IA Representative Felix Snow of Kansas City, and LeRoy Upton, 9th District secretary and secretary of St. Louis Local 143. Harvard O'Laughlin, Local 143 business representative, also addressed the gathering and told of the new projection processes he witnessed on his recent trip East.

The meeting closed with an election of officers. Hugh James, Sedalia Local 135, was re-elected president of the State organization, and O'Laughlin was re-elected secretary-treasurer.

- We were sorry to learn that Roger M. Kennedy, 3rd IA vice-president and business representative for Detroit Local 199, has had a recurrence of his eye ailment.

- Perry L. Carter, president of Cleveland Local 160, was elected business representative, succeeding Harland Holmden, who was recently appointed assistant IA president. Upon his election, Perry resigned from the presidency.

- Realizing that coming events cast their shadows before them, Local 400, Alexandria, La., pulled off a smart bit of showmanship at a recent civic parade in that city. The parade had 65 floats and ran for one hour and 15 minutes, so these enterprising Local

400 guys used a Strong Trouper spotlight and theirs was the only float in the parade that was spotlighted. As we all know, a Strong Trouper spotlight carbon trim burns for one hour and 20 minutes, thus giving the plotters five minutes leeway—if all went well—which it did.

The Local 400 men (behind the backs of other participants) quietly promoted a portable (two-men carry) electric light plant from the city fire department. This plant was placed in the rear of a station wagon, to which was attached a trailer. The lighting plant was bolted to the floor of the trailer in order to provide a steady light and to give the operative boys something to hold on to. Being conservative, the IA boys used only *nine* different colors to light their float, and the effect was merely kaleidoscopic.

This striking lighting job elicited praise from two radio stations and in the local press. Score a clean beat for Local 400's showmanship. Among the conspirators were W. Martin Lipscomb, business representative, who operated the spot; J. Earle Dupress, driver of the station wagon, and M. J. Angorola, who was in charge of the portable light plant.

- The recent testimonial dinner-dance tendered Local 306 old-timers Mike Berkowitz, Harry Mackler, and Joe Abrams was a gala affair attended by projection notables from many IA Locals throughout the state. The affair was sponsored by a group of friends of the trio, and was a tribute to their popularity in projection circles. Gold retirement cards were pre-

CINEMASCOPE PREMIER IN BOSTON



Poul Brown and Harold Sheerer, members of Boston Local 182, are shown in the projection room of the Metropolitan Theatre in that city on the occasion of the premiere showing of 20th-Fox's Cinemascope process for area exhibitors. The projectors were Simplex, the lamps Notional Excelite, which projected a picture to a screen 48 feet wide by 19½ feet high.

sented to Berkowitz, Mackler and Abrams, the awards being made by Harland Holmden, IA assistant president; Herman Gelber, president of New York Local 306, and Robert Goldblatt, honorary member of the 25-30 Club.

Among those present were Adm. Rutledge Tompkins and Arthur Meyer, representing International Projector Corp.; Allen G. Smith, New York branch manager for National Theatre Supply Co.; Paul Ries of National Carbon Co.; Charlie Muller, chief projectionist, Radio City Music Hall; Charles Kellner and Mike Springer, RCA Preview Theatre; and many other well-known local projection personalities. From out-of-town came Larry Sherman, Syracuse Local 376; Roy Fisher, Rochester Local 253; Albert DeTitta, Tom Neathery, Tony Boscarelli, and Ed Daugherty, Hudson County (N. J. Local 384. Representing New York City Locals were Solly Pernick and Arthur Yeager, No. 1; Steve D'Inzillo, Ernie Lang, Harry Garfman, Izzy Schwartz, Irving Merker, Izzy Sherman, John Krulish, and many others too numerous to mention here, from No. 306.

Abraham Kessler and Jacob S. Winick, chairman and co-chairman, respectively, of the arrangements committee, were commended by those present at the affair for the swell job they did in making this a long-to-be remembered party.

- Last month it was announced that a major Tv chain was "quietly switching over to all-live Tv and eliminating

LOCAL 447, SPRINGFIELD, MO. HOLDS 37TH ANNIVERSARY CELEBRATION



Pictured above is a group of Projectionists Local 447 members as they gathered at a breakfast party commemorating the Local's 37th anniversary. Seated, left to right: L. E. Glennan, business representative; N. Dudley McCann, secretary-treasurer; Carl Amsler, vice-president; I. H. McArron, president; A. C. Whittaker, trustee, and Max Weaver, sergeant-at-arms. Standing, left to right: Evert Baty, Elmer Nuttelmann, Jess Tuckness; O. K. Southwick, trustee, and Martin Kirchner, executive board member.

film." Despite this rumor, Hollywood last month had more television films in production than in any previous month, according to the current (May) issue of *American Cinematographer*. Today there are more than 110 Tv film series available for local and regional sponsorship.

Most of these films are currently being televised by the majority of the nation's Tv stations. Several new series are in the planning stage or are about to go before the camera. This activity means that more and more cinematographers will be recruited from among ranks of studio cameramen to photograph these television film programs. Last month, an average of 33 cinematographers was engaged weekly in directing the photography of Tv films in Hollywood.

- The annual spring meeting of the N. Y. State Association of Motion Picture Projectionists was held last month in Middletown, N. Y. Middletown Local 311 tendered a luncheon for the delegates and guests, after which the meeting was called to order and the business of the day discussed.

Of particular interest in the discussions were 3-D and wide-screen projection and the effects of these processes on the status of the projectionist. Edward E. Wendt, business representative for Albany Local 324, proposed that all Local members of the Association write to the International Office suggesting a policy of at least a 10% increase in wages for all projectionists working with these processes. The motion was seconded by Allen J. Tindal, business representative of Rochester Local 253, and passed by the body.

A message from IP's Jim Finn in which he lauded the craft for its importance to the success of any motion picture showing, was warmly received and the delegates present went on record endorsing IP as a staunch supporter of craft welfare and suggesting that all IA Locals subscribe their memberships 100% to the publication. (Thank you, gentlemen.)

The meeting closed with a midnight banquet celebrating the 31st anniversary of Middletown Local 311. All delegates and guests attending the Association meeting took part in the festivities.

- Alertness and fast work by two members of Local 299, Winnipeg, Canada—Jimmy Biggerstaff and Joe

Chess of the Garrick Theatre—saved a showing of "Bwana Devil" from flopping over a large area of Canada. One 1200-foot section of the picture gave not a 3-D effect but merely a blurred image and terrific eyestrain. Somewhere along the production, editing or exchange trail the right-eye and left-eye strips got on the wrong reels. Thinking fast, the Local 299 men switched the porthole filters, thus correcting the trouble, and then later they made the proper reel switch.

Frantic phoning to other showing centers disclosed the same "bull," with the same corrective measures being applied. So projection is purely a mechanical process, eh?

25 Years Ago—June 1928

- The General Executive Board met at the Tuller Hotel, Detroit, Mich. Among the appeals heard was that of Edward H. Kuhn, member of Local

221, Aurora, Ill., who appealed the action of the General Office in ordering his name stricken from the membership roll of the Local on the ground that his admission to membership was irregular. The Board unanimously concurred with the action of the General Office. . . . The General Executive Board unanimously concurred with the recommendation of the Finance Committee to increase the per capita tax to 90c. . . . The Board unanimously endorsed an appeal for financial assistance for the New Bedford (Mass.) Textile workers who were out on strike against a 10% reduction in wages. Local Unions were requested to forward all contributions to the General Office, who referred all such donations to the proper committees. . . . Charter installed for Local 656, El Centro, Calif. . . . Leavenworth, Kans., formerly in the jurisdiction of Kansas City, Mo., was granted a charter as Local 657. . . . Local 654, Minot, N. Dak. held its first annual dance.

OBITUARIES

JAMES J. HAMILTON, 65, charter member of Washington Local 224, died recently after an illness of several months. He served Local 224 in various official capacities and enjoyed the high regard of the entire membership. Hamilton joined the Local in 1911 and worked for many years at the Warner Bros. Uptown Theatre until he became ill. From 1918 to 1940 he was a District electrical inspector, and in subsequent years, in addition to working in various theatres, he was often called upon to run pictures at private showings. He is survived by his widow and three daughters, all of Washington, D. C.

WALTER S. CROFT, Sr., 64, former business representative for Local 170, Kansas City, Mo. died last month at St. Mary's Hospital in Kansas City. Walter Croft joined Local 170 back in 1910, and served as business representative from 1927 to 1931 when IA President William F. Canavan appointed him an International representative. He served as an International representative under Presidents Canavan and Wm. C. El-

liott. Croft later returned to Kansas City and in 1939 he was again elected business representative, holding that office until January of this year.

Croft had been in ill health for about a year and a half prior to his death, and when his official term expired January 1953 he refused to seek re-election. His passing was mourned by his many friends in the IA.

IRA E. DIETZ, 73, member of Local 79, Massillon, Ohio, died recently. He was active in labor circles in Ohio and at one time served as president of the AFL trades and labor assembly.

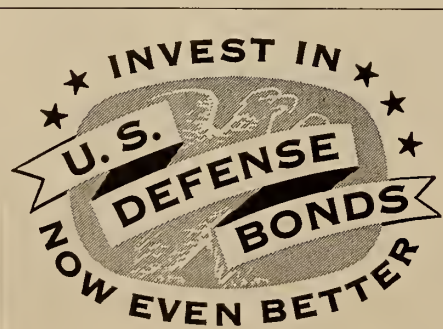
Motiograph 3-D Magazines

Motiograph now has available 25-inch magazines to accommodate the oversize 24-inch reels needed for the showing of 3-D films with one intermission.

The magazines are constructed of 18-gauge steel (0.049 inches thick) and are 3 7/8 inches wide, instead of the usual 3-inch width of the standard 18-inch magazines. The cast brass hinges and aluminum supporting spiders are specially designed to provide extra strength in the larger units.

The upper magazine has a fully-enclosed adjustable reel shaft tension device that can be locked permanently into the correct position. The takeup is enclosed in a cast aluminum housing with tension supplied by aluminum and cork friction discs and ball bearings.

To provide for any change in the standard diameter of the reel shafts from the present 5/16ths of an inch to 1/2 inch in diameter, the new magazines are designed to accept either size shaft.



Prediction of Electrical Failures†

It is now possible to build electronic equipment in such a way that most failures in performance can be predicted in advance and therefore prevented, this startling article reveals. Reliability of electronic units would be greatly increased if such designs were to be incorporated into future models.

UTILIZING a relatively unexplored approach to the problem of higher reliability of electronic equipment, the National Bureau of Standards is investigating the feasibility of detecting incipient failures long before they perceptibly affect overall performance. The study has as its goal quick and easy failure-prediction checks by unskilled personnel. It is being conducted under the sponsorship of the Office of Naval Research by J. H. Muncy of the NBS engineering electronics laboratory.

In this NBS technique a maintenance man simply plugs a portable failure-prediction unit into the equipment to be checked, and turns a multipoint selector switch. A red light flashes to identify stages or components that have deteriorated below safe levels and that have, therefore, become prospective causes of equipment failure.

In accelerated-aging experiments on military radio receivers the Bureau has succeeded in predicting a majority of failures many hours before they occurred.

How It Works

Either sudden or gradual failure of a tube or other component may cause failure of electronic equipment. Surveys have indicated that at least half of all equipment breakdowns are produced by gradual failures of components. The NBS

work has been concerned with practical means of spotting these gradual failures before the device becomes inoperative.

In multi-stage equipment it is generally impossible to detect such incipient failures by input-output performance measurements, because the tolerance of an overall measurement will usually mask the performance decrease of one stage. Daily variations in measured gain of a typical piece of equipment are greater than the change caused by the gradual deterioration of one tube in one stage. As the tube continues to deteriorate, the time at which impairment of overall performance becomes detectable may virtually coincide with the time at which overall failure occurs. Successful failure prediction therefore requires that the

condition of each important stage or small group of stages be established individually.

Failure Level Threshold

In equipment designed for reasonably long life a component can gradually deteriorate a great deal before it reaches the level of minimum acceptable performance (the failure level). It is the gradual nature of this deterioration that gives rise to the possibility of prediction of failures long in advance.

Tube failures constitute by far the most common cause of electronic equipment breakdown, and the experimental NBS failure-prediction system depends primarily on the sensing of decrease in tube transconductance of critical stages. But the test also permits detection of changes in components other than the tube, provided these are changes that affect the gain of the stage.

The test consists primarily of operating the tube as a resistance-coupled amplifier, with a 3,000-cycle signal, and sensing whether or not the voltage gain

(Continued on page 28)



To the Editor of IP:

Your magazine is eagerly looked forward to, especially with the introduction of the new 3-D techniques. The only details I have read about the new Cinema-Scope system are what have appeared in the non-trade press. However, I believe the local theatre managers are unhappy about the high cost of installing this system which has been quoted at about \$20,000 for one theatre alone. The film, "Bwana Devil," has just commenced in Sydney, and another theatre there is showing "Metroscopics," which I am told is a re-issue of the pre-war "Audioscopics."

Robert A. Mitchell's articles are also looked forward to; the latest on "Types of Theatre Reproducers," is the best I have seen on the subject. I could not say, however, that I have heard theatre sound reproduction to compare with the latest English l.p. discs when they are played over wide-range gear. So far, American long-playing records are not available here.

Your articles on black masking vs. illuminated screen surrounds are most interesting. Personally, I have always preferred the former, with correctly rounded corners, and wonder how a 3-D picture would look in the Schlanger set-up. Your articles on modern projector design are always appreciated. How about an article

on the latest Ernemann projector which has been mentioned briefly in your columns?

J. D. N. BLISS
Townsville, Qld., Australia

To the Editor of IP:

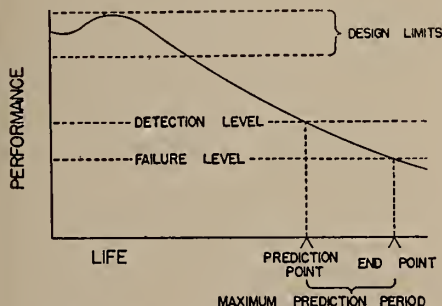
I desire to sincerely thank you for your excellent publication and the very able manner in which we craftsmen are kept up to date by your various contributors. I have been operating since 1920, doing shows two nights weekly until 1933, and since then seven and eight shows weekly.

The greatest development, I think, since sound has been the introduction of safety film, even though there has been a continual "beef" against it in this country. The trouble chiefly has been the difficulty of making splices, but this has been a result of hand splicing which should have gone out years ago anyhow—a reliable splicer being the absolute answer.

Through your publication we are kept up to date in new developments, and are never at a loss to answer our employers or the public on new innovations, which knowledge is available only through IP. I keep a special book in which to index IP articles so that I can quickly refer to any article no matter how long ago it appeared.

REG. A. STEWART
Wangaratta, Vic., Australia

† National Bureau of Standards.



Curve shows how performance of electronic component changes during service life. Performance of new item may vary between design limits; but as life increases it falls off, first to the detection level, then to the failure level. Somewhere between the detection and failure levels is the point at which the component should be replaced to forestall breakdown. The quick, semi-automatic checking routine described herein reports when that point has been reached.

3-D a Lumen-Eating Process

Filters, Specs Induce a 75% Light Loss Over-All

To the Editor of IP:

For the past few months I have been reading articles in IP concerning the projection of 3-D pictures. These articles said that the projection light would have to be at least 2 times as bright as the present light. When I found out that I was to run "Bwana Devil," I began to worry about how to get more light out of my present projection lamps. However, my worry was just a waste of time, because I used the same amount of light on "Bwana Devil" that I used on other pictures.

I got my extra brightness from the 3-D

screen itself. Our regular screen was painted a half dull and half bright silver by Williams Screen Co. Some scenes in "Bwana Devil" were so bright that they hurt the eyes to look at it. I used 46 amperes for a 20-foot screen with a 110-foot throw.

I don't believe that projectionists need to worry about getting enough light for 3-D pictures. A good repaint job on the old screen or a new 3-D screen will do the job. If they want to increase it even more, they can try the new carbons.

LAWRENCE E. JOHNSON

Aggie Theatre, Stillwater, Oklahoma

THERE is no objection to resurfacing a regular matte screen with the aluminum coating necessary for 3-D projection, providing that three very stringent conditions are met: (1) The aluminum alloy paint must be of the proper type to provide a reasonable amount of light-diffusion, to provide high reflection of light, and to resist oxidation which dulls and discolors. (2) The metallic coating must be smoothly applied in 2 or 3 coats. (3) The screen must be free from wrinkles and stretched very tight.

Wrinkles in a "silver" screen are highly visible during projection because of the specular qualities of the metallic surface. The absolute necessity of having a perfectly flat 3-D screen cannot be overemphasized.

Controlling Light Factors

Regarding the excellent picture-brightness claimed by Mr. Johnson for showings of "Bwana Devil" at his theatre a few figures may be given based solely on arc-current and screen size. These figures, however, do not necessarily represent actual screen-brightness conditions at the Aggie Theatre, but they do represent prevailing conditions found by the writer in other theatres showing 3-D films, and hence may be of general interest.

Lamps, lenses, and screens—picture-brightness depends on all of them; and the importance of the projection lenses should not be overlooked. Because it is customary to replace old, uncoated F:2.5 lenses with modern, coated F:2.0 (or F:1.9) lenses for 3-D showings,

I shall assume that Mr. Johnson is using the "faster" lenses.

According to data issued by National Carbon Co., a simplified high-intensity mirror-arc drawing 46 amperes (7-mm and 6-mm trim) furnishes approximately 9,450 screen lumens (one projector running, but without film). This is a lot of light; and since Mr. Johnson's 20-foot screen has an area of 300 square feet, illumination of his screen has an intensity of 31.5 foot-candles. With a white matte screen of 80% reflectivity he obtains a screen-brightness of 25.2 foot-lamberts, a very good light level indeed. With an aluminum screen, however, the light level varies somewhat as one views the screen from the middle or the side of the auditorium.

Theatre Viewing Angles

Aluminum screens are less "specular"—that is, more "diffusive"—than they used to be, and that is a good thing. If Mr. Johnson's screen has the properties of a new, factory-made aluminum screen, its average reflectivity as viewed from the extreme sides of the auditorium will be about 50%; while for a wide section through the middle of the theatre it will seem to reflect about twice the amount of light that falls upon it, that is, about 200%. By "robbing" extreme viewing angles of light, the silver screen actually furnishes to the middle of the auditorium about 2½ times more light than the best matte screen.

Well, with his aluminum screen Mr. Johnson is getting a brightness of about 15.75 foot-lamberts as viewed from the side seats, and 63 foot-lam-

berts as viewed from the middle seats. With ordinary "flat" films this results in a picture-brightness high enough to hurt the eyes, as Mr. Johnson says. But with 3-D, involving the use of Polaroid filters over the projector lenses *and* over the eyes of the patrons—2 thicknesses of Polaroid in all—the brightness takes a nosedive.

The use of two projectors running simultaneously *does not* double picture-brightness when the Polaroid glasses are worn! One eye sees only the light from one machine, and the other eye sees only the light from the other machine. Only when the patron removes his polarizing glasses (perhaps to see how queer the 3-D picture looks without them) is the brightness doubled. For the purpose of calculations, therefore, we need compute only the brightness obtained from one projector alone.

Light-Transmission Data

The polarizing filters are not efficient transmitters of light. We have heard it said that the viewing spectacles transmit as much as 80% of the light falling upon them; but this is not true, even though we wish it were. The writer has tested the Polaroid glasses and projection filters on a precision photometer and found that they transmit only 40% of the light falling upon them. Fully 60% of the light is wasted.

With two thicknesses of Polaroid—projection filter plus viewing spectacles—only 16% of the light gets through to the eyes of the patron, and 84% of the light is wasted! Subtract 84% of the light from a uniformly illuminated white surface, and the resulting color-tone is a light medium gray. Compared with conventional "flat" projection, 3-D projection is gray projection.

Whether we like it or not, 3-D is lumen-eating process, a light-wasting process; and the earlier reports on the efficiency of the process have often been inaccurate and misleading. It is a fact, and not hearsay or guesswork or second-hand information, that the Polaroid filters supplied for showings of "Bwana Devil" have a transmissivity of only 40%.

To return to the possible screen-brightness at the Aggie Theatre: when Polaroid filters are placed over the projection lenses, and *one* machine is run without film, and the illuminated aluminum screen viewed *without* Polaroid glasses, brightness is reduced

at the sides of the auditorium from 15.75 to 6.3 foot-lamberts, and is reduced in the middle of the auditorium from 63 to 25 foot-lamberts.

When the observer wears the Polaroid viewing glasses, and both projectors fitted with polarizing filters are run without film, side-seat brightness drops to only 2.52 foot-lamberts, and center-seat brightness to 10.08 foot-lamberts. The center brightness, which covers most of the auditorium if the theatre is long and comparatively narrow, is satisfactory for good viewing. 10 foot-lamberts is the minimum recommended brightness for projection.

Screen Contrast Values

Clearly, 10 foot-lamberts is not enough to "hurt the eyes," though it gives an excellent picture, with no loss of shadow detail. Only a few of the side seats "down front" will suffer from the $2\frac{1}{2}$ foot-lambert level. Some idea of the brightness-difference between 10 and $2\frac{1}{2}$ foot-lamberts can be gained if it be arbitrarily assumed that 10 foot-lamberts brightness represents standard "white." On this assumption, $2\frac{1}{2}$ foot-lamberts brightness is light gray.

As I said at the outset, all of these screen-brightness figures should not be taken as an actual analysis of 3-D projection conditions at Mr. Johnson's theatre; but if they happen to be closely in line with what Mr. Johnson is getting, we can say that the 3-D presentations at the Aggie Theatre are of excellent quality.

ROBERT A. MITCHELL

Altec Increases Service Staff

A number of additions to Altec Service Corp.'s engineering and service staff have resulted from increasing orders for installation of the company's stereophonic sound system, according to a recent announcement by E. O. Wilschke, operating manager.

R. L. Simpson has joined the Newark, N. J. office, and H. G. Leedy and J. E. West now work out of the Southern division offices at Atlanta, Ga. C. S. Bacon and J. K. Sweeney are with the Central division in Chicago. Other new assignments include: E. R. Roach and J. L. Pyrtle to the Southwestern division office.

Gain in Kodak Profits, Sales

Net earnings of the Eastman Kodak Co. for the first quarter of 1953 were \$9,916,028, up 14% from \$8,697,477 in the first quarter of 1952. These earnings are equal to 59 cents a share on 16,555,254 common shares and compare with 52 cents a share in same period last year with 16,527,083 shares then outstanding.

Lens Showmanship



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All This and Heaven Too?

FROM THE TRADE PRESS

DAVENPORT, Iowa—The single-film, single-projector 3-D color process developed by R. E. Schenstad was given its first public demonstration here before a group of local exhibitors and projectionists by the inventor and by the president of Stereocolor, Inc., Col. B. J. Palmer.

Schenstad has accomplished what he said his process will do: (1) provide stereo motion pictures taken by a single camera; (2) a single 3-D black-and-white film which projects the images in color; and (3) a single-projector 3-D mechanism.

WHEN "Stereocolor," purported to be a cheap and effective method of single-strip 3-D projection was demonstrated, IP's observer was on hand. His report follows:

"While some aspects of the system are interesting, our reaction was not favorable on the whole. Experienced principally as a photographer, Schenstad was seriously handicapped by what seemed to be a limited knowledge of professional theatre projection.

“Our impression is that this system could not be used in designing a 3-D

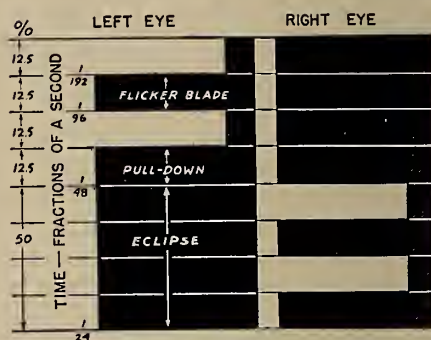
attachment for existing projectors. *It would have to be a completely new unit.* And, although it produces a 3-D picture, it leaves unsolved present 3-D problems such as inadequate light and the need for Polaroid glasses.

Two Projectors in One

"The machine Schenstad used was constructed of parts from two ancient Holmes 16-mm projectors. Two projection movements and two lens units were mounted one above the other and connected to a common power supply. In the film train, 35-mm sprockets were used on all shafts. Schenstad's idea is that one 35-mm film strip could hold two 16-mm stereo images.

"One of the pictures, supplying the left-eye image to the screen, was projected by the upper intermittent movement. As the film passed the second intermittent movement, the picture beside it was projected, supplying the right-eye image to the screen.

"While the top movement had an open shutter blade, allowing the left-eye picture to reach the screen, the lower shut-



The unbalanced periods of light and darkness for each eye in the "eclipse," or alternating-frame, method of projecting 3-D. Constant and contrary readjustments of the iris in each eye is required to compensate for the relatively long periods of light and dark. Also, image stimuli are rapidly hitting the brain, first from one eye and then from the other, instead of from both eyes at once. These two factors probably account for the visual fatigue felt by the viewer. See next page.

crudely made, and there were several other projection problems, including an annoying flicker. Also, he used a home-made film-trap assembly, which had no pads, so he had difficulty holding his picture together on the screen.

Special Printing Process

“Four color wheels were used in projection to obtain a picture in color on the screen from black-and-white film. It was possible to use four wheels because the projection system included two supplementary lenses mounted in a prism and mirror arrangement. The color wheel, as it spun, was said to create the ‘color content’ in each frame. *A special method of printing and matching the frames* made this possible. All in



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all, the quality of the color obtained was not bad."

Many people in the industry are not aware that the alternating-frame method of 3-D projection is not a new idea and has been carefully examined by serious workers in the stereo motion picture field such as John A. Norling, who mentions alternating-frame, single-strip, 3-D photography elsewhere in this issue.

However, this method is not yet of commercial importance because of some very serious drawbacks, extremely difficult to overcome, principally eyestrain and nausea on the part of viewer. Schenstad's system does not overcome these problems. Following are some comments on the subject by Norling:

"Stereoscopic Motion Pictures"; IP for Aug. 1951 and Feb. 1952.

THE FACTS OF LIFE

"From time to time, the alternate projection of the members of a stereo pair has been proposed. In this system, the right-eye image, for instance, is projected first, then the shutter interrupts the light beam while the film moves down to position the left-eye image. Thus there are periods of flicker that occur at different times for each eye. If we break this sequence of events down, we find that the first light period has a value of 12.5% of the complete picture cycle.

"The flicker blade on the projector shutter (considering a two-bladed shutter) gives a dark period lasting 12.5% to be followed by a light period of the same, then a long dark period consuming 62.5% for pull-down and eclipse to permit the other eye to see its image.

"If standard sound-film speed of 24 frames/sec is used, the resulting flicker is very annoying. Stepping up the projection to 48 frames per second increases flicker frequency twice, but it still is noticeable. There is a physiological effect that is likely to become disagreeably apparent—usually headache or nausea—after a few minutes of viewing pictures projected in this way.

Eyestrain and Nausea

"A complete period of darkness for one eye, while light reaches the other, will probably always result in visual fatigue, if not in nausea, no matter how high, within workable limits, the flicker frequency is brought.

"Flicker of low frequency calls for traction on the control muscles of the irises when bright light enters one or both eyes. The rapid occurrence of the transmission of stimuli, first from one eye, then from the other, and the motor messages from the brain to the muscles, delivered in rapid sequence, probably accounts, in part, for the visual discom-



NATIONAL THEATRE SUPPLY has set an enviable record of achievement and service to the motion picture exhibitor.

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fort experienced by most people when viewing "eclipse" stereo movies.

Flicker vs. Light Intensity

"Perception of flicker depends upon the intensity of the interrupted light, as well as the flicker frequency. The more intense the light, the higher the frequency must go before flicker fusion is attained.

"Also, the larger the angular field over which flicker is distributed, the greater the consciousness of flicker. Hence the dimmer the picture and the smaller it is, the lower becomes the flicker fusion frequency."

Technicolor Profits Rise

Because of the increased color requirements of the new film techniques and competition from Tv, color is assuming more importance to producers, said Technicolor, Inc., in announcing increased profits for the first quarter of this year. There are 122 pictures contracted for this year with Technicolor, whereas last year, the total was 97.

A consolidated net profit of \$896,838, equivalent to 94 cents a share, for the first quarter of 1953 was announced by Technicolor, compared with a net profit of \$518,948, or 56 cents a share, for the corresponding quarter of 1952. At the recent stockholders' meeting, it was voted to split the stock of Technicolor, Inc., at the rate of 2 shares for 1.

SMPTE Gathering Information for Wide-Screen Standards

A SURVEY of motion picture theatres throughout the country, for the purpose of gathering information on the maximum screen size most theatre auditoriums can effectively use, has been undertaken by the SMPTE. Data on 3-D equipment installations will also be obtained. A detailed report on the survey will be published in the near future. This information was requested by a group of industry delegates who attended the recent SMPTE convention in Los Angeles and the idea was endorsed by the Motion Picture Research Council.

Some of the questions asked are as follows: Is your theatre already equipped for 3-D? Have you increased the size of your screen to provide for wide-screen projection? What is the seating capacity of your orchestra; balconies? What is the size of your present picture, focal length of projection lens, and projection angle, if any?

Along with space to answer these and other questions, the four-page questionnaire provides diagrams of theatres with and without balconies with spaces for the exhibitor to write in such information as the width of his stage, the width of the row of seats nearest the

stage, and the distance of the last row of seats from the screen. Such problems as the sight clearance line from the last row of orchestra seats, as affected by the length and height of the balcony, are also considered.

In line with IP's policy of cooperation with all standardization efforts, projectionists are urged to enquire whether this questionnaire has been received by their theatre and aid as much as possible in seeing that it is completely and accurately filled out. This comprehensive form can give a clear picture of the various physical limitations of the average theatre in using the new film processes, something that is badly needed right now.

If a questionnaire has not been received by your theatre, one can be obtained from Henry Kogel, staff engineer of the SMPTE, 40 West 40th St., New York 18, N. Y. The final report, when available, will be presented and evaluated in IP.

Kodak Producing New Plastic

Eastman Kodak announced that it has entered an agreement with Imperial Chemical Industries, Ltd., a British firm, licensing Kodak to manufacture and sell Polyethylene, a light plastic that has many applications in consumer and industrial fields.

Present plans call for the construction of a plant at Longview, Tex., with an estimated capacity of 20,000,000 pounds annually. Polyethylene in its solid resin form is tough and flexible at low temperatures; resists many chemicals; and has excellent electrical properties. It is adaptable to varied insulation and packaging uses.

Columbia Profits Increase

Columbia Pictures reports an estimated net profit of \$310,000 for the past 39 weeks ending March 28, slightly ahead of the \$280,000 earned in the same period a year ago. The profit is equal to 17 cents per share on 687,436 shares outstanding, as compared with 11 cents on 670,000 shares for the same period a year ago.


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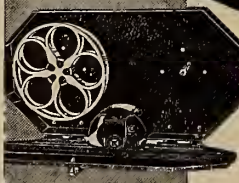
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Prestoseal Mfg. Corp. has an improved electric automatic splicer designed to splice 16-mm, 35-mm or 70-mm motion picture film, magnetic film tape, striped film or microfilm without scraping or the use of cement.

The PRO model Presto-Splicer operates through a combination of controlled heat and pressure applied in an automatically-controlled time-cycle. The splice is achieved without cement or scraping. Butt-welded ends produce a homogeneous bond with no loss of either picture or sound. This splice will last indefinitely.

Flexible Splice Possible

One improvement in the new model is that a ratchet assembly has been added which advances a teflon tape applying a new pressure surface for each splicing, thereby assuring good results each time. Another improvement has been the addition of a pre-plasticizing assembly that automatically pre-plasticizes the film prior to the splicing cycle. This prevents the film from becoming brittle and allows a flexible splice under all conditions.

The Presto-Splicer handles all types of safety-film bases including tri-acetate and mylar stock. It can be used for raw stock, short ends, color film, negative, prints, and the like.

New 'Irish' Recording Tape

Orradio Industries, Inc., Opelika, Ala., announced that it is marketing an improved magnetic recording tape sold under the trade name "Irish Sound Plate."

It is claimed to have the following properties: (1) two times the tensile strength of acetate; (2) will not tear or break; (3) is unaffected by moisture or temperature change; (4) engineered for high-speed operation, 15 to 500 inches per second; (5) is not affected by static; and (6) a greater surface slip.

Spectra Screen Light Meter

The Spectra Brightness Spotmeter, a useful tool for measuring the brightness of motion picture screens, is now being marketed by the Photo Research Corp., Alameda, Calif.

A compact unit that is aimed with a pistol grip, the meter utilizes a vacuum phototube, a high-sensitivity amplifier and a microammeter. Readings are taken directly in foot-lamberts. An area as small as three inches in diameter can be measured from a point ten feet away so that the meter or operator do not interfere with the source of the light. This instrument is particularly effective in gauging light distribution for 3-D and wide-screen showings.



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ELECTRICAL FAILURES

(Continued from page 21)

has fallen below a predetermined limit. In addition, provision is made for voltage and current measurements and for checking capacitors for leakage.

Equipment Modification Needed

The military receiver selected for experimentation at the Bureau, an 18-stage guard-channel receiver, required only slight modification to adapt it to the failure-prediction system. The circuits were first examined to determine which stages were the more sensitive to component faults. Eight stages were found to be relatively insensitive; wiring was changed to permit checks on the other 10 stages.

The modification consisted in provision for breaking grid and plate leads to permit insertion of an audio signal and of a device for measuring gain. These connections were brought to a multi-point connector. (The plug from the portable

failure-prediction unit is plugged into this.) The whole modification entailed use of only about 7.5 percent additional components, mostly capacitors and r-f chokes. Wiring and parts were all fitted without difficulty into available space in the receiver.

The experimental NBS prediction test unit includes a 3,000-cycle oscillator, voltage-sensing circuits, a leakage detection circuit, and an alarm light. As the main selector switch is rotated in a check of the gains of the various stages of the receiver, different predetermined levels of audio signal are applied to the grid of each stage. Each input signal is preadjusted so that, if the gain of the stage has changed by more than a safe amount, the voltage-sensing circuits will actuate the alarm light. After the test unit has been plugged into the receiver, the operator needs only a few seconds to rotate the selector switch and discover any weak stages.

A separate 3-position switch on the test unit permits capacitor-leakage sensing and voltage-and-current sensing in addition to the gain sensing. For field use the unit can be made compact and portable.

Results Obtained

In laboratory evaluation of this failure-prediction system, 1000-hour accelerated-aging processes were applied to six of the modified receivers. Prediction checks were made at five-hour intervals.

A total of 79 tube failures occurred in the six receivers during the 1,000 hour test period. Sixty-five of these failures, or about 80 percent, were of a gradual and therefore predictable nature, while the others were caused by unpredictable open or short circuits. (These were caused mostly by *shock*, a condition to which civilian equipment is not exposed.—Ed. note.)

Of the 65 predictable tube failures 58 were accurately predicted many hours before the receiver stopped functioning. Of the seven predictable failures not suc-

cessfully predicted, two were in circuits not undergoing check. Failures of components other than tubes were negligible and do not warrant any conclusions as to predictability.

Value of the Process

As applications of radio and electronic equipment continue to increase in extent and importance, problems of maintenance and reliability become more and more serious. This is particularly true of military electronic equipment. In addition to depending on it extensively for military communications, the Armed Forces increasingly rely on electronic equipment for radar detection of aircraft and vessels, for the automatic aiming, firing, and detonating of weapons and missiles, and for numerous instrumentation and control applications. The inevitable complexity of much of this equipment augments the danger that failures of components will cause failures of essential equipment at critical times.

Although much progress has been made toward better electronic dependability, particularly through improved-quality components, the reliability of present-day electronic equipment still leaves much to be desired. In some large and highly specialized electronic installations, such

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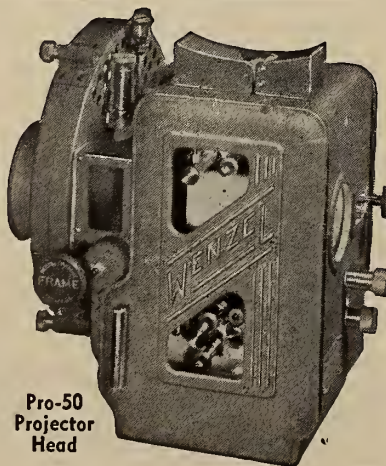
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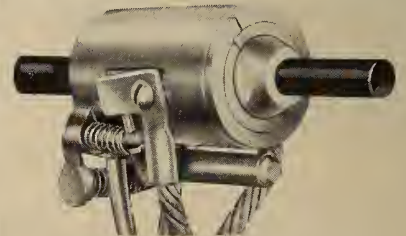
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as the Whirlwind computer, valuable means for automatically detecting marginal conditions have been built into the equipment. However, very little study seems to have been made of the practical possibility of detecting incipient failures by means of simple routine checks with portable test equipment.

The fact that large bombers may use some 2,000 vacuum tubes suggests the magnitude of the problem of attaining satisfactory reliability in military electronic equipment. It has been estimated that a typical home television receiver, with about 20 tubes, averages one tube failure for every 1,200 hours of operation; with the same rate of failure, a plane with 2,000 tubes would have one failure every 12 hours. The much more severe environmental conditions in the plane increase failure probabilities.

Either sudden or gradual failure of a tube or other component may cause failure of electronic equipment to function properly. The NBS work has been concerned with practical means of spotting these gradual failures in advance.

The principles of measurement on which the NBS failure-prediction work has been based are not new; yet until now very little has been done toward development of practical techniques for semi-automatic checks for detection of incipient failures.

HYPERGONAR SIDELIGHTS

(Continued from page 15)

drawing, the story is much different. We see lenses with plano-convex and concave characteristics capable of compressing the image on the horizontal plane. The result is that a film with an aspect ratio of 4 by 3 records a compressed image that actually has much different proportions than the film.

When this film is projected through a Hypergonar projection lens system, the distortion caused by compression on the horizontal plane is corrected and the image on the screen has an aspect ratio of 2.66 to 1. The principle, as Prof. Chretien mentions in his article, is similar to the compression and elongation that occur if we look at ourselves in the "crazy mirrors" at an amusement park. The distorted image of these mirrors can be corrected if the image is viewed through another mirror shaped to counteract the distortion.

COMMENTARY

I have read with great interest both the French article in *La Technique Cinematographique* and IP's exposition of Chretien's Hypergonar lens-system. It would seem to me that IP's explanation is both accurate and lucid.

The aspect-ratio of 2.66 to 1 given by IP applies, of course, only to the present American Fox "CinemaScope" method employing a camera-aperture identical with the old "silent" aperture. It is of interest to note that Fox is vigorously pushing its new proposal to alter the 35-mm standard in such a way that three 0.050" magnetic stereo-sound tracks and one 0.029" magnetic control (or effects) track are carried on the picture film.

It is proposed that the width of the perforations be reduced from 0.110" (ASA Z22.36 1944) to 0.078". The picture-frame would be reduced in width by one of the 50-mil tracks and the 29-mil control track so that the CinemaScope aspect-ratio on the screen would be 2.55 to 1, in spite of the reduction in sprocket-hole width. Projector manu-

facturers believe that the industry, by and large, is opposed to the Fox proposal.

I, personally, am strongly opposed to the new 35-mm film standard proposed by Fox. First, I am opposed to the wide screen on optical and esthetic principles. Then, too, I do not look for satisfactory sound reproduction from magnetic tracks so narrow as those proposed—ratio of signal to ground-noise level too low. Again, the use of narrower sprocket-teeth in projectors will result in increased film wear and a deterioration of picture quality. The last criticism is especially cogent in view of the fact that acetate film does not possess quite as high a tear-strength as nitrate projection film.

I believe that IP's excellent discussion of the Hypergonar lens-system will be appreciated by projectionists.

DR. JOSE FERNANDEZ

Buenos Aires, Argentina

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VISIBILITY FACTORS

(Continued from page 12)

that it will not tolerate candlelight projection, no matter how wide and handsomely curved the screen may be.

In the days before reflector lamps and high-intensity arcs had become available, movies were much too dim in a large number of theatres. In an effort to compensate for the lack of light, laboratories issued "thin" prints, and theatre managers kept their auditoriums very dark while pictures were being shown. The widespread use of amber-tinted film stock for making silent movies actually cut the light down to 70 or 80% of normal, but the sunshiny hue created an illusion of increased brightness.

Too Much Light

A projected picture can be too bright as well as too dark. One extreme is as bad as the other. In no case should screen brightness exceed 45 or 50 foot-lamberts, for excessive brilliance causes shutter-flutter to become annoyingly conspicuous. There will be little pictorial gain except for an increase in contrast—a wider range of luminosities from the deepest blacks to the brightest whites. Normal brightness (15 foot-lamberts) is sufficient to reproduce the entire scale of tones in the film-images. (The writer regards a screen-brightness of 30 footlamberts as the most satisfactory level for both black-and-white and color.)

The 48 alternations of light and dark per second become literally dazzling when brightness exceeds 100 foot-lamberts. The projectionist can convince himself on this score by placing a large sheet of white cardboard about 10 feet from the projector porthole by means of a tall pole and showing a picture on it. The small, extremely bright picture will be seen to flicker violently. The same effect is produced by projecting blank light on the regular theatre screen with the projector running.

Lighting Limitations

Tripling the arc-lamp current, with suitable carbon trims, will indeed provide the desired 15 footlamberts of screen brightness for CinemaScope, if the conventional screen has that degree of brightness; but this expedient is clearly impossible in most medium-size and all large theatres. Lamps so powerful are not to be had; and even if they were, the film could not stand so

much heat. Drive-ins, we fear, will have to struggle along without CinemaScope.

Polarized-light 3-D also has brightness difficulties. Because each eye sees only one image of the superposed stereo pair on the screen, the use of two projectors running simultaneously does not double effective illumination. Further, the Polaroid filters placed over the projector lenses and the eyes of patrons reduce effective illumination to about one half of normal, reckoned as an overall average for all positions in the auditorium.

Aluminum-Surfaced Screen

The aluminum-surfaced screen necessary for polarized-light 3-D increases apparent picture-brightness in the middle of the auditorium, but it drastically reduces brightness beyond the optimum viewing section inside a 10-degree solid angle having its vertex at the middle of the screen and its axis slanting downward at an angle equal to the tilt of the projectors.

In general, however, it may be considered that no polarized-light 3-D projection will appear as bright as conventional movies unless the arc amperage be nearly $1\frac{1}{2}$ times normal in each projector. Since two projectors are operated at the same time, 3-D requires about 3 times the current-consumption of conventional projection.

DISTRIBUTION OF LIGHT

Brightness-distribution has two aspects: the uniformity of illumination projected upon the screen and the distribution of the light reflected by the screen throughout the auditorium. The latter aspect involves the specular characteristics of the screen itself. White matte screens are now considered to be the most suitable kind for all except long, narrow theatres; and since matte screens are very good diffusers of light, their use obviates the problem of changes in picture-brightness as an observer moves about the auditorium.

Natural Vision 3-D cannot make use of matte screens, however, because this type of screen, having a dielectric reflecting surface, converts plane-polarized light into ordinary, non-polarized light. Such a conversion nullifies the effect of the Polaroid filters placed over the picture-machine lenses. Metal-surface screens must be used because they affect plane-polarized light not at all when viewed from directly in front of the screen, though they unfortun-

ately induce elliptical polarization as the viewing angle is increased relative to the angle of incidence.

Polarization Factors

Excessive elliptical polarization permits the left eye to see the right-eye image faintly, and *vice versa*. This is why Natural Vision ought to be viewed within five degrees of a straight line extending from the middle of the screen up through the middle of the auditorium. To sit too far at one side results in an out-of-focus double picture, as well as in a dim one.

It is also of interest to note that the 3-D observer must hold his head perfectly straight to get the 3-dimensional effect and to avoid the fuzzy double image. If the head is tilted, each eye sees the wrong image as well as the proper one. In fact, the 3-D effect is *completely* destroyed when the observer tilts his head at an angle of 45 degrees—the amount of 3-D deterioration being directly proportional to the sine of twice the angle of head-tilting!

[TO BE CONTINUED]

Correction Anent CinemaScope

In the article "Visibility Factors in Projection," by Robert A. Mitchell, in IP for May, there appeared a reference to the CinemaScope process (foot of Col. 3, page 7) as follows:

"... The trick is turned by optical wizardry. Over the camera lens is placed a cylindrical lens that 'compresses' a wide field into the regular aperture. The prints are made in the ordinary way; but when they are shown, an achromatic cylindrical lens is placed over the projection lens. Being turned to an angle of 90 degrees to the position of the camera cylindrical lens, this lens performs an *opposite* function—it *expands* the *squeezed* photograph to wide-screen proportions."

The foregoing statement is in error, because the projector hypergonar lens is *not* turned to an angle of 90 degrees to the position of the camera hypergonar. They both are positioned exactly the same.

20th-Fox Buys Hurley Screen

Hurley Screen Co., Long Island, N. Y., has been acquired by 20th-Fox along with a screen processing plant in New Jersey. In view of the growing flow of CinemaScope lenses from Bausch & Lomb, the big CinemaScope equipment bottleneck now is stereophonic sound.

It is understood that RCA, Westrex and others are going into extra work shifts in order to produce the necessary units.



“God: Give me the strength to smile...”

Smile, and hold back your tears: SHE must not see them.

Keep secret the voice that is crying inside of you: SHE must not hear it.

Smile...that she may sense no echo of the voice YOU heard this morning—the surgeon's voice, gentle and hopeless. “I'm sorry. I'm afraid we're too late.”

* * * * *

“Too late...” Cancer, the most terrible scourge of all, last year killed 70,000 Americans who would have lived if treated in time. Few indeed are the Americans whose lives will never be shadowed by this monstrous and implacable enemy. It may be you. Your wife, your parents. Your children...

“Too late...” The bitter, pitiful truth

is that we Americans—the most generous people on earth—have not yet contributed adequately to the war against cancer. And some are paying immeasurably in agony and grief, because there is not enough money.

Is there hope—? Hope of a final, certain cure for cancer—?

Yes, there is hope. Night and day our medical laboratories are forging the swords of knowledge. But not as fast as we all wish and pray they were—there is not enough money...

Far from enough! Last year, the American Cancer Society was able to allocate only \$4,100,000 for cancer research—less than three cents per American per year! Yet, as things stand today, 22 million Americans will die of cancer—for cancer strikes

one out of five. How long can we remain so indifferent to this monstrous thing—how many lives can we afford to throw away—?

Won't you please contribute—now, before you forget again? Please let your contribution be as large as your faith, and as heartfelt as your prayer... that, working together, we can lift this sorrow not only from our own time and nation, but from all the ages of man to come...

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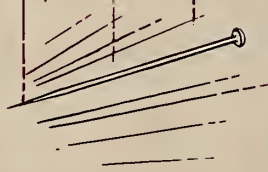
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Volume 28

JULY, 1953

Number 7

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MONTHLY CHAT

IN ORDER to put an end to the conflicting claims and confusion concerning the merits of the various 3-D and wide-screen systems, Saul E. Rogers, an attorney connected with the motion picture field, recently suggested that the industry unite in organizing a competently staffed research bureau which would pool the knowledge and skills of scientists working within the industry, and also make use of the research facilities of important technical schools and universities.

This research bureau would be supported by the contributions of the industry as a whole; all would profit in terms of standards and exact information about what could and could not be expected from the new processes instead of being confused by extravagant statements.

Even more important, the entire industry would then have the satisfaction of knowing that the best scientific brains had been brought together to develop and improve the photographic, projection and sound recording processes which are the lifeblood of motion pictures.

It was only as a last resort, when many theatres were closing or half empty, that the producers even bestirred themselves to investigate the technological developments that had been available for years. As long ago as 1948, IP commented on this situation editorially. In January, 1949, we stated:

"Three-dimensional pictures, stereophonic sound, and greatly improved color processes are but three of the advances long promised by the film industry. But it begins to look as though the big brass have become very coy about putting money into technological developments on behalf of an industry which, while the source of their opulence and power, might possibly be in for a bit of rough going."

It was noted by Mr. Rogers that in every important industry in which there is a scientific application of the knowledge of chemistry, electronics, electricity, optics or similar sciences, there has been established a highly efficient research organization to which the problems involved in the industry can be submitted for general research, observation and analysis. "It seems *amazing*," he noted, "that the film industry, one of the most important in the nation . . . has never established such a bureau."

IP also thinks that this situation is amazing. The lack of an industry-wide research bureau is a good example of the shortsighted, selfish outlook that has a lot to do with the dangerous and confusing position the motion picture industry finds itself in today.

Confusion Says-

Natural Vision?
Columbia 3-D?
Vitascope?
Tru-Stereo?

RKO Radio 3-D?
Stereo-Cine?
CinemaScope?
20TH-Fox 3-D?

Zeiss-Ikon 3-D?
Todd-AO Wide Screen?
Metrovision?
Paravision?

Polaroid 3-D?
Regiscope Wide-Screen 3-D?
U-I 3-D?
Warner 3-D?
Cinerama?

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The Strong lamp automatically maintains a screen light that in intensity and color value is constant and identical to that of the associated lamp which is burning simultaneously, as required by the fact that each eye sees only one of the two projected images.

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Going Wide Screen?

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Round-Up of the Wide-Screen Process

DURING the past few months the industry has been deluged with rumors about new aspect ratios, and projectionists have probably heard a great many conflicting stories about the screen proportions of pictures now in preparation at the various Hollywood studios. Also, right in the projectionists' home territory, the theatre, there is a movement on to convert the standard-size pictures now in release to the larger wide-screen size by a process of masking apertures and using shorter focal-length lenses.

To help clear up some of this confusion — it can't be entirely cleared

This article and the accompanying illustrations present a detailed picture of the new wide-screen process from cameraman to projectionist, covering the methods used for filming pictures so that they are adaptable both to wide-screen and standard projection.

up just yet because the studios have not agreed on standards — IP is producing a group of illustrations and some excerpts from a recent article by Arthur Gavin in the *American Cinematographer* covering wide-screen developments at the Hollywood studios. Also included here are some other observations on the subject that will be

of particular interest to projectionists.

Most members on the craft, particularly the older ones, will remember that controversy over the proper aspect ratio is not a new thing in the film industry. When sound was introduced, for instance, the addition of the sound track reduced the width of the standard 4 by 3 aspect ratio, resulting in a virtually square picture. Studio directors screamed that the square shape was a stifling handicap to composition and group action.

Projectionists Took Over

While the directors complained, projectionists and exhibitors went into action on their own and restored the screen image to its former proportions by reducing the height of the projection aperture and expanding the picture with a one-half inch shorter focal-length lens. Of course, the smaller aperture sometimes scalped the heads and amputated the feet of performers, but this was considered a small price to pay for a rectangular screen.

It was pointed out recently by Herbert Barnett, president of the SMPTE, that back at the turn of the century big-screen and road-show pioneer Ly-



CURVED WIDE SCREEN developed by Universal-International studio is metallic-surfaced to intensify brilliance of projected picture, both wide-screen and 3-D. Scene is from U-I's "Thunder Bay," first wide-screen release in Technicolor. Paramount and MGM have developed similar screens.



NORMAL — For comparison, a scene from a current Hollywood production is pictured above and below in three different formats. Here it is shown in the conventional 1.33 to 1 aspect ratio, long the industry standard.

man Howe roamed the country shooting and projecting his film with wide-angle lenses. The Lumiere brothers built and used a spectacular 98-foot screen at about the same time. During the twenties and thirties, there were any number of experiments with large wide-screen pictures such as the Fox "Grandeur" process and Paramount's "Magnafilm." Both of these, however, were based on the use of a wider film, 70-mm in the case of Grandeur.

Columbia's 4-Way Camera

A good example of present Hollywood thinking would be the recent announcement by Columbia that it had developed and put into use a "new 4-way camera which will shoot simul-

1.85 to 1 (Univ.-Int., Columbia)

1.75 to 1 (Metro-Goldwyn-Mayer)

1.66 to 1 (Paramount)



WIDE-SCREEN

The same scene given the new aspect ratio of 1.85 to 1, which has been adopted as standard by Universal-International and Columbia studios. Dotted lines define aspect ratios adopted by two other studios as would apply to same scene.



CINEMASCOPE—The same scene as it would be photographed and screened in the new ultra-wide-screen CinemaScope process. Of the three methods illustrated, only the latter requires special lenses for camera and

projector. Special metallic-surfaced screens are employed in showing all wide-screen as well as three-dimensional films, because wide-screen demands maximum illumination and reflectance.



... And the sound was all around

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taneously 2-D, 3-D, 2-D wide-screen, and 3-D wide-screen." Both within and without the industry, this statement created much speculation as to just what sort of "magic" camera this studio had contrived.

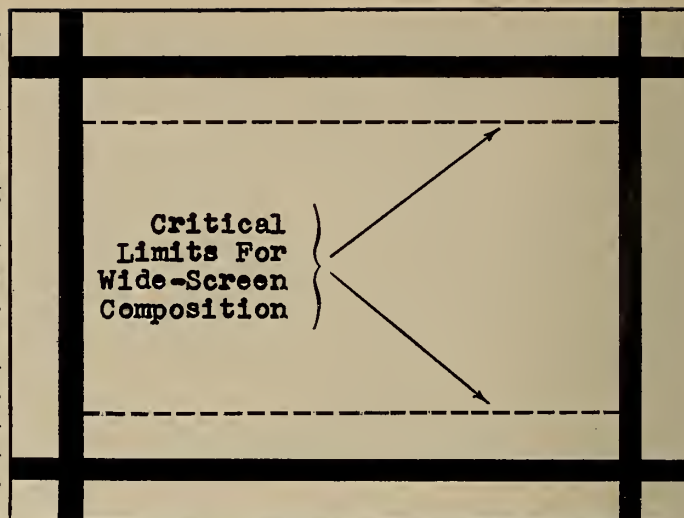
Actually, what Columbia's technical men had done was discover that almost any conventional motion picture can be given pleasing wide-screen presentation simply by projecting it with a wide-angle lens and masking it down top and bottom to give the projected picture a wider format. This, of course, applies to both 2-D and 3-D

Transition Problems

This all-purpose system is also being used by Paramount, Universal-International and Metro-Goldwyn-Mayer. The transition from standard to large wide-screen pictures is creating a serious problem for exhibitors because once the current supply of "new style" pictures is in release, there won't be enough of the new-type film product to fill exhibitors needs, at least for some time to come. This means that standard 2-D films must be shown in competition with pictures in the new format. At the same time, each major studio has a backlog of unreleased 2-D pictures, the market value of which stands to be seriously affected as the trend to stereo and wide-screen films

PATTERN of typical ground-glass on Mitchell camera finder, with new wide-screen masking (dotted lines) added. Heavy lines define standard Academy aperture. In masking finder for wide-screen composition colored plastic is used so cameraman can

view and compose scene with consideration to both aspect ratios.



gains impetus throughout the country.

Then studio engineers found that most backlog films could be screened successfully in a wider aspect ratio, and the decision naturally followed to shoot all new productions with the newer wide-screen ratios in mind. To the cameramen this means composing scenes differently so that important detail or action will not be lost when the picture, usually photographed full-frame, is screened. The illustrations describe this process more fully.

Motion pictures made by Columbia and the other studios adopting the

4-way method are now composed essentially for wide-screen presentation, but at the same time there is harmonious composition extending to the full limits of the standard aperture frame. In the camera finder there is a special transparent mask (see illustration) which enables the cameraman to compose his pictures with both aspect ratios in mind. Thus all films made henceforth may be exhibited in either conventional format or wide-screen without the viewer being aware of any serious cropping of the overall scene.

Continuing Controversy

It is in the matter of aspect ratio — the relative height to width of the screen — that many of the studios are in disagreement. Opinion has ranged from 2 to 1 down to 1.5 to 1, excluding ultra-wide processes such as Cinerama and CinemaScope which are not being considered here. Eventually, standardization must come, but at present each studio believes its plan to be the correct one.

In the meantime, if a projectionist should change the proportions of any of the pictures now in circulation or any of the large backlog of 2-D films waiting for release, he may in some cases find that he has sliced off somebody's head or feet, but the studios claim that the change can be accomplished without any real damage.

What is needed are aperture plates of the desired proportion, the proper shorter focal-length projection lenses, and a large, metallic-coated, high-reflectivity screen. A large, wide picture can then be obtained. There are certain limitations, however, such as the structure of the theatre, strength of the light source, and graininess of the screen image when greatly enlarged.



IN THOSE STUDIOS where productions are being photographed so they may be screened on either normal or wide screens, new rules apply in composing each scene. Dotted lines above show the critical limits for wide-screen composition beyond which no action must extend. In this scene, should man telephoning suddenly stand, his head would be cut off by the masking during projection, unless operator moved camera upward to keep him below the dotted line.

How Much More Light for 3-D...Wide Screen?

When the screen found its voice more than a quarter century ago, the question, "How much will it cost?" was asked — if at all — from force of habit. Every showman knew he *had* to buy sound, just as he now sees the necessity for new equipment to handle the latest epoch-making projection techniques.

History Repeats

Exhibitors today are hurrying to exploit the terrific public interest in 3-D and wide screen showings—spending thousands and tens of thousands of dollars on new optics, screens, sound equipment... But what about screen lighting?

Light Losses Terrific

For 3-D and wide screen you need more light. *Much* more light. In almost every instance, *regardless of theatre size or present equipment*, you need **ALL THE LIGHT YOU CAN POSSIBLY GET!**

If that seems like a broad statement, just consider 3-D light losses, for example. Even with *two* projectors trained on the screen and

with screens of much higher reflectivity than before, you give your patrons only about *half* as bright a picture as you previously furnished with conventional films!

Wide screen — same story. In this new medium, projection light is distributed over *2½ times the area* of ordinary screens.

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Visibility Factors in Projection

3. Color and Nature of Projection Light

THE PRECEDING instalment in this series considered the picture-visibility factors of size of picture, shape of picture, brightness, and distribution of illumination. This concluding article examines in detail the color and nature of arclamp light and also covers other factors involved in the projection of a clear, sharp picture, such as surround illumination, contrast, image definition and steadiness of the picture.

A projection illuminant ought to be white. If it isn't white, the colors in natural-color films will be distorted. The screen should also be white, else the light reflected to the eyes of the audience will be tinted just as much as it would be if the light itself were colored.

But what is meant by "white"?

Color of Sunlight

The direct rays of the sun as they fall upon the earth through a dust-laden atmosphere are a slightly yellowish white. Light reflected down from the blue sky is definitely bluish white. Now, the *mixture* of slightly yellowish sunlight and blue skylight falling upon a freshly shaved block of colorless magnesium carbonate placed outdoors in the country at sea-level on a sunny day at 12 o'clock noon is a pure, neutral white. We call it pure, neutral white because that is what it looks to be. Scientists call it a whiteness of 6,500 degrees Kelvin (or Absolute), and designate a light-source of the same whiteness as Illuminant C. Noon sunlight alone has a color-temperature of 4,800 degrees Kelvin, and is designated as Illuminant B.

A tungsten-filament electric lamp burning at a rated voltage has a color-temperature of 2,850 degrees Kelvin. A light-source of this color (amber-white) is called Illuminant A. The low-intensity carbon arc is whiter than Illuminant A, but it is yellower than Illuminant B — noon sunlight without skylight. Low-intensity projection is therefore not "snow-white" projection. It cannot show off Technicolor, Ansco Color, etc. to best advantage. All color films for theatre use are "balanced,"

By ROBERT A. MITCHELL

as they say, for the pure white light of Illuminant C.

The high-intensity carbon arc does not have a fixed color-temperature. The tint depends on the nature of the chemicals packed into the core of the positive carbon. Old-style HI trims for "straight" and Hi-Lo arcs gave a harsh, violet-blue light that made black-and-white movies look chalky and glaring — a bit too "cold" and "electric" to harmonize with the "human" qualities of movie drama. The color of present-day Tv images is similarly redolent of arctic snows.

"Pearlex" HI carbons, on the other hand, radiate a softer light for the projection of 16-mm color films, which are balanced for the Mazda lamp — Illuminant A. Pearlex goes to show how the color of HI arcs can be altered by clever chemistry.

The standard trims for modern HI projector arcs, however, are *pure* white, or very nearly so. That is, they correspond to Illuminant C, the mixture of noon sunlight and skylight which is the whitest white we know of. Since black-and-white films are printed on colorless-base stock, the audience will also be pure white, unless perchance the screen be dirty and yellowed with age.

Pure White Light

Strange as it seems, the pure white light of Illuminant C can be duplicated by mixing together any two colored lights of complementary colors — red and greenish blue, for example, or lemon yellow and violet-blue, or green and purple-red. If our white projection illumination be produced by mixing two complementary colors, with certain color-bands of the spectrum missing, certain natural-color films will not be reproduced with fidelity. Some colors will look too dark, others too bright, and some of them altered in hue.

We say *certain* natural-color films because different processes employ dyes having different spectral characteristics. The manufacturers of car-

bons, however, make sure that their carbons do not omit or overemphasize any wavelengths of visible radiation.

Light for Color Films

Except for the ever-present natural-color film, there is no objection to deviation from *pure* white projection light, providing that the deviation is in the right direction. The chalky appearance of light poor in red-orange rays and too rich in blue-violet rays has already been noted. Suppose, now, that we shift the color-temperature of our light away from the polar radiance of the iceberg and toward the cozy glow of the fireside. In other words, let's examine the effect of a lower color-temperature upon black-and-white projection.

Low-intensity arcs were not bright enough except for very small theatres, and they were more efficient producers of heat than of light. But in the little theatres where they could be used to supply adequate screen-illumination, projection was characterized by a chromatic softness and sturdy warmth that had two important advantages. It induced a kind of emotional empathy that made the screen a more humanized medium than it is under the harsh glare of the HI arc. It increased viewing comfort and picture-visibility by subduing the colder rays and increasing persistence of vision to a degree sufficient to minimize appreciably perception of shutter-flicker.

Silent pictures with a film-speed of 16 frames per second (shutter frequency of 32 cutoffs per second) would have been almost intolerable with HI illumination. That is, if clear-base positives were used for productions longer than 2-reel comedies.

Old-Time Tinted Stock

Old-time release-print practice took advantage of the dramatic subtleties of "hue." From 80 to 90% of all feature footage was printed on tinted-base stock. The colors most often used were tints of orange or amber. The choice of amber, the color by which movies can be viewed with a minimum of visual discomfort and eyestrain, can hardly have been mere

chance. Compared with the silent movies, modern motion pictures are stereotyped and coldly mechanical in both photography and presentation. The instrument for visual drama has degenerated into a mere machine.

The peripheral regions of the retina of the eye have much less persistence of vision than the central region, and they are much less sensitive to the warmer, redder rays than they are to the colder, bluer rays.

The retina is a light-sensitive screen containing two kinds of nerve-cells, some bearing cones and other rods. Direct vision is cone-vision, for the central region of the eye — the region of delicate and highly discriminative vision — contains only cones. The peripheral regions contain the rods. Now, cone-vision is most sensitive to yellow light of 580 millimicrons wavelength, while rod-vision has its sensitivity-peak at about 530 millimicrons in the green region of the spectrum. Rod-vision is *night-vision*, indistinct and utterly color-blind. Red objects appear black by dim moonlight, yellow objects gray, green objects white, and blue and violet objects gray. Rod-vision also extends for a short distance into the ultraviolet, invisible to the cones.

Rapid changes in brightness, however, are readily detected by the peripheral rod-vision; and since peripheral vision is blind to red but very sensitive to the shorter wavelengths, it can be understood why snow-white movies, if viewed from seats close to the screen, seem to flicker more than amber or yellow-tinted movies.

SURROUND ILLUMINATION

It has always been standard practice to mask motion-picture screens with black velour and to have the projected picture overlap the masking by an inch or so all around. The reason for this practice is twofold.

First, the masking hides the fuzziness of the highly magnified image of the aperture. Film picks up dust from the air, and some of the dust lodges upon the edges of the aperture and makes the boundaries of the projected image somewhat irregular. Second, the black masking provides a neat, sharp cutoff "frame" for the picture and remains in fixed position regardless of transient machine vibrations and slight differences between the two projector apertures which would become visible at changeovers.

As an incidental advantage, the con-

trast between the black masking and the projected photographic image creates a slight *apparent* increase in picture-brightness, especially around the edges where an increase is needed to help give the appearance of uniform illumination.

It has been found by experience that the sharp corners of the black-masked, rectangular screen are visually distracting and generally unpleasing. For this reason the corners of the screen are sometimes rounded, and round-corner projector apertures are used in conjunction with the special round-corner masking. The most pleasing results are obtained when the radius of the round corners is 1/16th the width of the screen.

The "Synchro-Screen"

In recent years noteworthy attempts have been made to substitute luminous masking for the conventional black, sharp-cutoff screen surround. In one type of luminous surround, the surround-brightness is maintained at a constant level. In a second, lighting is uniform, but is varied in luminosity to match the overall brightness of the projected picture. In a third, the surround-lighting is produced by the reflection of light from the screen upon a "cove" which surrounds the screen, and which is surfaced with essentially the same material as the screen. This type, represented by the RCA-Schlanger "Synchro-Screen," provides non-uniform lighting which corresponds with the tone and color of light and dark areas near the edges of the picture.

As illuminated masking goes, the simple and ingenious "Synchro-Screen" was considered as satisfactory as any. Because of the correspondence of the reflected light with light and dark areas in the picture, it created the illusion of a large, though vignetted, image. It also possessed considerable interest as a novelty. But it did not make pictures easier on the eyes. It extended peripheral flicker, and it decreased picture-visibility by reflecting light both back to the screen and into the eyes of the audience. This resulted in a haze which "softened" the picture by reducing contrast and washing out shadow-detail in all scenes having considerable areas of highlight. It also interfered with correct color-rendition in natural-color projection.

The black surround is still with us as a necessary adjunct to the pre-

sentation of motion pictures. It is neither beautiful nor ugly because, when pictures are being shown, it is invisible. Only the picture is visible; and that seems to this writer like a very sensible state of affairs. In fact, the dead black surround is the only type of screen masking which does not create a visual or a psychological stimulus of any kind. It thus cannot interfere in any way with the quality of the projected picture.

Auditorium Distractions

It is common knowledge that all visual stimuli should be absent from the immediate vicinity of a motion-picture screen. Reflections from the stage and proscenium should be minimized. Wall lights and illuminated clocks should be banished from the front of the auditorium. Necessary exit signs should be furnished with only a minimum of illumination.

In order to enhance the picture and to remove all possible sources of visual distraction, it is a common practice to paint the stage floor dead black in theatres having balconies. This prevents light from the picture from being reflected by the stage into the eyes of patrons seated in the balcony. The writer regards this extreme precaution as unnecessary, however.

The illuminated screen-surround seems already to have died as a live topic in projection technology. As a pretty novelty it has had its day; and attention is now being turned to panorama, stereoscopy, and other methods of audio-visual presentation which affect the intrinsic character of the motion picture to a profound degree.

PICTORIAL CONTRAST

Reduced to its bare essence, a picture is merely a conglomeration of areas having different brightness and colors. When these differences disappear, the picture disappears; and nothing remains but a blank surface. In black-and-white photography these differences are of brightness only, and comprise the factor called *contrast*.

If an adequately illuminated motion picture is projected in total darkness, the picture on the screen will reproduce the entire contrast-range of the photographic film, and will have maximum visibility if the illumination is strong enough to just perceptibly reproduce the blackest blacks as very deep grays.

If, during projection, extraneous

light is thrown upon the screen and gradually increased in brightness, a point will be reached where the blacks and darkest grays in the picture will appear the same. That is the point where contrast, and hence picture-visibility, begins to be reduced by the spill light. Further increases in the brightness of the extraneous light will destroy the medium grays. The lighter grays are next to disappear. Finally, even the bright highlights of the picture vanish as, for example, when direct sunlight falls upon a drive-in screen. At this point all perceptible contrast ceases to exist, and no picture can be seen.

Modern theatre practice advocates the use of moderately high levels of auditorium-illumination at all times in order that patrons find their way to and from their seats without breaking their necks, and also to humor the law in regard to the maintenance of "decorum."

In theatres where the auditorium light-level is not quite high enough to render the blacks and deepest grays of the picture indistinguishable from each other, it might seem that no harm has been done to picture-visibility. Actually, however, viewing-comfort may be diminished by auditorium lighting which is bright, yet not bright enough to affect pictorial contrast.

Dark Theatres Popular

It can do this by increasing the visibility of the interior of the auditorium, thus presenting to the eye quite a number of visual distractions. The patron also becomes aware of the fact that he is himself clearly visible to his neighbors, that he is being watched, and he accordingly is unable to relax. Dark theatres are more popular than lighted ones, as a rule.

These observations do not apply to the regular house-lighting turned off when the show starts.

Movie screens are supposed to have a high reflecting power to meet projection requirements. It goes without saying that the higher the reflectance of the screen, the brighter will be the picture. But if a screen reflects 80% of the light falling upon it from the projectors, it will also reflect 80% of the light coming to it from illumination in the auditorium. This suggests that a screen has the potentiality of being its own worst enemy.

While no contrast may be lost when black-and-white films are shown, the color of the deeper tones in color films

may be appreciably reddened by auditorium-lighting.

Suppose that we coat our 80%-reflectivity screen with a neutral gray paint to cut the reflectivity in half. The resulting 40%-reflectivity screen will appear light gray instead of white, the picture will be only half as bright as before, and so will the reflected auditorium-light. Suppose that we now double the intensity of the projection light. The picture will then be exactly as bright as it was on the white screen, but spill light will be only half as bright. The deeper tones in pictures will be darker and less reddish.

Preview Room Screens

Gray screens are not advocated by us for theatre use, however, because it is more practical to cut auditorium lighting in half than to double the projection light. The gray screen nevertheless is useful in studio preview rooms in which it is necessary to take notes or read a script while a film is being shown. Because preview-room screens are very small, it is possible to use medium gray screens and quadruple the projection illumination for normal picture-brightness.

The contrastiness of the images on the film varies a great deal. In most cases the prints are developed to give maximum contrast with minimum loss of the photographic detail recorded on the negatives. Some detail is lost in

the positive, either in the extreme highlights or shadows, depending on printing density; but the loss is not generally regarded as important. Comparison of a number of old silent prints with modern films fails to reveal any great improvement in emulsions.

3-D Contrast Control

Contrast must be very carefully controlled in the processing of stereoscopic films in order that the corresponding images of stereo pairs match each other perfectly in density and color. Modern machine processing fortunately permits close control.

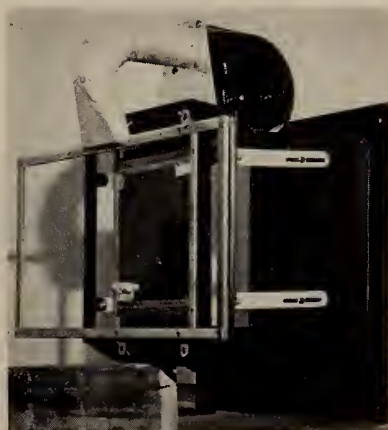
The contrast of projected pictures is lowered by the use of dirty, scratched, or uncoated projection lenses. Oil-fog condensed upon the lens-surface immediately facing the aperture is a common cause of light-scattering and lowered contrast — as well as of hazy focus. Brand-new projector mechanisms which prevent oil leakage to the film side of the machine do not entirely eliminate the fogging of the lenses by oil.

Prints are run on both old and new machines, and are bound to get messed up with oil as they pass from theatre to theatre. The heat in the aperture vaporizes some of this oil, and the comparatively cool glass surface of the lens condenses it. The projectionist

(Continued on page 27)

3-D Filter Cooling Unit

A porthole filter alignment and cooling mechanism, designed to provide a permanent air-cooled mounting for the filters needed when projecting 3-D films, is now available from the Drive-in Theatre Mfg. Co., Kansas City, Mo. This product will be found useful because the Polarizing material in filters becomes



Porthole filter alignment and cooling mechanism for 3-D filters.

less stable with increasing temperature, and cooling is necessary if they are expected to retain their properties over a period of time.

The housing of the mechanism fits snugly on the inside of the projection porthole. An adjustable sliding frame allows the projectionist to quickly slide the filter to one side for standard projection. The bottom of the housing slants downward at a 25-degree angle so as not to interfere with the beam when the projection angle is steep.

Eight Adjustments Possible

The framing unit allows eight adjustments for lining the filter up at the required angle to the projection beam. It is so constructed that once proper alignment is made it can be permanently locked in place even though the projectionist is able to slide the filter to one side when a flat film is being shown.

The blower provides 100 cubic feet of air a minute. The duct and spreader are constructed of metal, making the entire unit fireproof. The spreader is designed to distribute air over the entire surface of the filter.

Projector Carbons for New Motion Picture Systems

Recent developments in the motion picture industry, such as 3-D and wide-screen projection, have resulted in a need for more projection light. The following article presents a detailed picture of the capacity of presently available arclamp equipment and examines the potential of some experimental high-powered carbons expected to be available soon for theatre use.

By F. P. HOLLOWAY, R. M. BUSHONG and W. W. LOZIER

National Carbon Company

A Division of Union Carbide and Carbon Corp.

THE attention of theatre owners and projectionists, is now focused on the need for more projection light created by recent developments in the motion picture field — wide-screen 3-D, and outdoor theatres. In some instances, projection light requirements have been greatly altered compared with conventional projection, necessitating a complete reappraisal of carbon arc light sources and lamp equipment.

A complete summary of the amount of screen illumination obtainable with the popular combinations of lamps, optical systems and carbons used for

35-mm motion picture projection was published in 1947.[†] The years since have seen important new developments in all aspects of motion picture projection systems. Hitex* 13.6-mm, super high-intensity carbons were introduced in 1949 for use in rotating-carbon, condenser-type lamps at 170-180 amperes.

Recent months have witnessed the introduction of a new 13.6-mm standard high-intensity carbon to replace the former one used in condenser-type lamps at 125-150 amperes. A new Suprex* 9-mm positive carbon has extended the range and output of the non-rotating carbon, reflector-type lamp used with copper-coated, non-rotating carbons. A new Suprex 7-mm positive has made possible increases in efficiency and light output compared with Suprex 7-mm carbons formerly used. New high-speed, reflector-type lamps employing rotating 9- and 10-mm positive carbons have been marketed and are finding wide usage.

New Powerful Carbons

In addition to these combinations already in commercial usage, National Carbon Co. has developed several new carbons specifically to meet the demands of the new projection systems. These include the new Hitex 9- and 10-mm carbons for rotating-type reflector lamps; and the new Ultrex* 10-, 11-, and 13.6-mm carbons which are most effective when used with adequate water cooling in rotating-reflec-

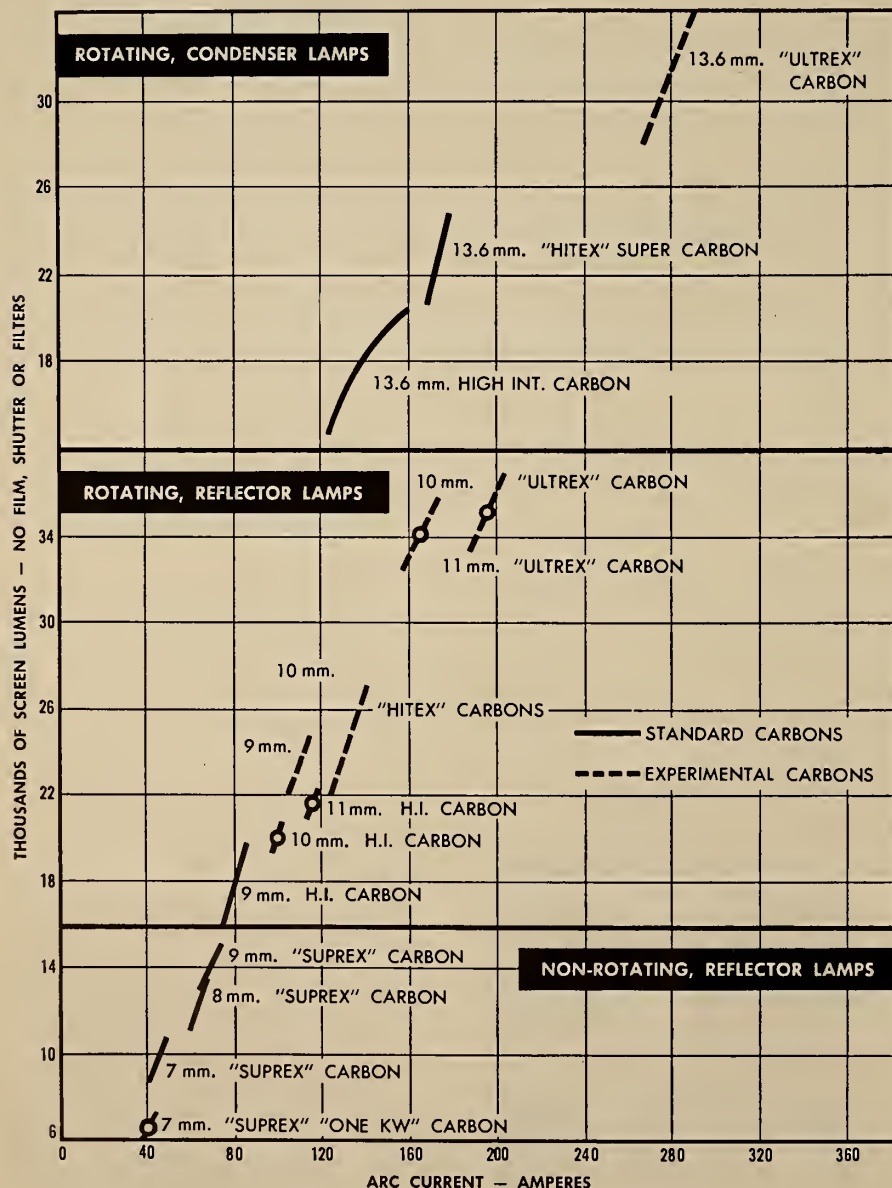


FIG. 1. Maximum Screen Light vs. Arc Current.

[†] "Screen Illumination With Carbon Arc Motion Picture Projection Systems," by R. J. Zavesky, C. J. Gertler, and W. W. Lozier; Journal of SMPTE, 48: 73-81, January, 1947.

* The terms "Hitex," "Ultrex" and "Suprex" are trade-marks of Union Carbide and Carbon Corp.

NOTE: A paper to appear in a forthcoming issue of the SMPTE JOURNAL will give more technical data on the subjects discussed in this article.

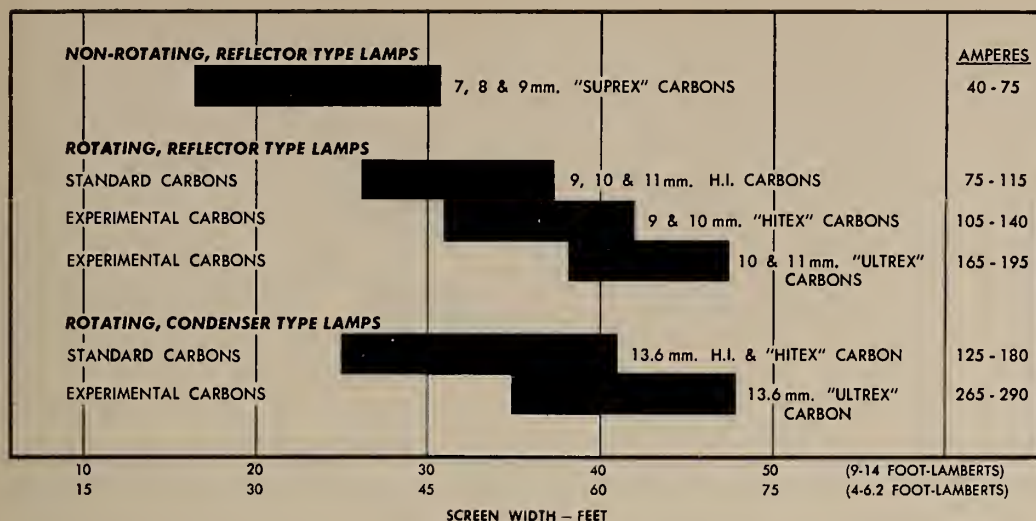


FIGURE 2
Size of Screens Capable
of Illumination to Indi-
cated Screen Brightness
at Center of Screen.

[Based on maximum
light, 50% shutter trans-
mission, 90% projec-
tion port glass transmis-
sion, 75% screen reflec-
tion factor, and 4 by 3
picture aspect ratio.]

tor as well as condenser-type lamps. While these new carbons have not been placed on the market as yet, they will be available whenever suitable lamps are announced.

Figure 1 shows maximum screen lumens at different arc currents for various lamp and carbon combinations with no film, shutter or filters. Values of screen lumens obtained with the lamps and optical systems adjusted to produce 80% side-to-center distribution ratio are not shown, but they generally fall 10 to 25% below the maximum values. Fig. 1 shows that the rotating-type reflector and condenser lamps are capable of projecting more than 20,000 lumens with *standard* carbons, and more than 30,000 lumens with suitable *experimental* carbons.

Possible Protective Means

In some cases, these lamps can project more light and heat onto the film than can be accommodated without some suitable cooling means. This article does not specify means of protecting the film from high levels of radiant energy flux; it points out, however, that the use of infra-red absorbing filters, infra-red reflecting filters, controlled air-blast and the use of a water-cooled film gate have all been asserted to provide some protection to the film. Such protective means may require the sacrifice of a small portion of the screen light and will correspondingly change the lumen values of Fig. 1.

The light requirements of the new projection systems may be analyzed in correlation with these latest developments, beginning with a restatement of the American Standards Associa-

tion indoor theatre standards, which recommends a screen brightness of 9 to 14 foot-lamberts with the projector running and no film in the gate.

Screen Widths, Light

The data of Fig. 1 have been used to calculate the widths of screens which can be illuminated to the aforementioned ASA standards, with a projection shutter of 50% transmission, a projection room port glass of 90% transmission, and a projection screen of 75% reflection factor.

The resultant screen widths are shown in Fig. 2. The lower ends of the screen width ranges shown in Fig. 2 belong to the smaller and lower power carbon trims and to the *maximum* recommended screen brightness; while the larger screen widths pertain to the larger and higher power combinations and to the *minimum* recommended screen brightness.

No allowance has been made for light losses that may occur with heat filters which may be needed under some conditions to prevent heat-on-film troubles. The data of Fig. 2 will need to be correspondingly altered in case there are any additional light losses beyond those assumed. For example, a 10% loss in light will reduce the indicated screen widths about 5%.

Outdoor Theatres Pose Problem

Reference to Fig. 2 shows that Suprex carbon trims are capable of illuminating screens approximately 16 to 30 feet wide at maximum light. Rotating-type reflector lamps increase these screen widths to 23 to 33, and 26 to 37, feet with standard carbons. Generally speaking, the rotating-type condenser lamps are capable of illuminating about the same width screens

as the rotating-type reflector lamps.

The foregoing discussion shows the present difficulty of lighting screens of 50 to 70 feet width, common in outdoor theatres, to the standard of 9 to 14 foot-lamberts applicable to indoor theatres. However, the screen brightness requirements of outdoor theatres are not as precisely known as are those for indoor theatres, because of the widely variable physical conditions. Just what level of screen illumination can be obtained on these large screens depends upon the maximum amount of light obtained from the projection system.

Increasing the indicated screen widths by 50%, *without changing the present standard ratio of height to width*, corresponds to a screen area 2.25 times greater. Such a screen can be illuminated by the combinations of Fig. 1 to a center brightness of 4 to 6.2 foot-lamberts. These screen brightness limits have been chosen *not* because of their ultimate desirability but rather because they are in the range being obtained by some outdoor theatres. The rotating-type reflector lamps and the rotating-type condenser lamps can illuminate screens of 45 to 70 feet width to a screen brightness of 4 to 6 foot-lamberts.

Wide-Picture Requirements

Although the data contained in the tables are limited to projection from a *standard* 35-mm motion picture film aperture of 0.600 inches x 0.825 inches and thus are not directly applicable to other film aperture sizes and picture aspect ratios, rough estimates can be made in some instances. For example, the outputs of the various 35-mm film projection systems

may be redistributed by optical means over various sizes and shapes of film apertures and projection screens. If this be accomplished with minor or known losses, the results expected can be closely approximated.

The requirements of CinemaScope, which employs a standard projection frame but a 2.66 to 1 picture aspect ratio, can be calculated once the information on the transmission and reflection of the added accessories employed is known.

Except for the optical losses in the added anamorphoscope lens which functions to produce a two-fold expansion of picture *width* during projection, this expansion would produce a two-fold increase in picture area and reduce by one-half the available screen brightness *obtainable with a normal unexpanded image*. Therefore, the light requirements for the same screen brightness would be double those of *conventional* 35-mm pictures on the same type screen — that is, if the announced CinemaScope aspect ratio of 2.66 to 1 be observed.

Screen Reflectivity Level

If suitable directional-type screens of higher reflection factor, with adequate uniformity over the audience area, can be obtained, the lumen out-

put required to illuminate a given size screen to a specified brightness can be reduced proportionately. In the case of CinemaScope projection, if a directional screen can be obtained with *twice* the reflection factor of a normal matte screen, the two-fold increase in screen area produced by the anamorphoscope lens would be approximately compensated for and the existing screen brightness with the same projection lamp would be essentially the same.

Requirements of 3-D

The stereoscopic motion pictures of the type being shown in this country employ separate lamps, projectors and 35-mm films for the projection of right- and left-eye pictures each polarized at right angles to the other; a metallic-type screen is used and polarizing viewers are worn by the audience. The light losses will depend upon the transmission factors of these various stereoscopic components, which vary with the particular design and with technical characteristics.

Typical transmission values must be discussed here, realizing that these may be altered by future design changes during the evolution of stereoscopic motion picture projection.

Present-day polarizing materials

are reported to have a typical light transmission value of 40%. The viewing spectacles, likewise, are reported to have a transmission of 80%. At the present time the screen reflection factor of suitable metallic-type screens is more uncertain and subject to variation depending upon the particular type employed. A general characteristic of the metallic-type screen is an inverse relation between maximum screen reflection factor and uniformity of screen brightness over all angles of view in the theatre.

Directional Screens

Consequently, a compromise is chosen between high screen reflection factor with undesirable directional variation on the one hand, and lower screen reflection factor with better directional characteristics on the other. A reflection factor of 125% is typical for a number of screens, meaning that the *reflected* screen brightness measured in foot-lamberts is 125% times the light intensity in foot-candles *incident* on the screen.

The combination of this screen reflection factor with the transmission values of the polarizer and the viewer results in an overall light transmission of 40% ($1.25 \times .40 \times .80 = 0.40$) compared with the 75% reflection

TABLE 1. 3-D MOVIE PROJECTION BASED ON ONE-HOUR MINIMUM CONTINUOUS OPERATION

NOTE: Values in parentheses are approximate.

POSITIVE CARBON	Typical Positive Carbon Travel* Inches/Hour	Amperes	Positive Consumption Inches/Hour	Maximum Light	
				Screen Lumens†	Per Cent Distribution
Non-Rotating, Reflector-Type Lamps: D. C. Trim					
7-mm Suprex	7¼	40	5.8	6,500	65
Non-Rotating, Reflector-Type Lamps: Suprex Trims					
7-mm New Suprex	10	47	10	10,500	60
8-mm Suprex	10	62	10	11,800	65
9-mm Suprex	10	65	(10)	13,000	70
Rotating, Reflector-Type Lamps: Standard Carbons					
9-mm H-I	16	78	16	16,800	60
10-mm H-I	16	(95)	(16)	(18,500)	60
11-mm H-I	16	115	15	21,500	65
Rotating, Reflector-Type Lamps: Experimental Carbons					
10-mm Hitex	16	(120)	(16)	(20,500)	65
Rotating, Condenser-Type Lamps: Standard Carbons					
13.6-mm New H-I	18	160	17.5	20,500	60
13.6-mm Hitex Super	18	175	18	22,500	60

* Depends upon Lamp Design. †Screen lumens without shutter, film, filters, or stereoscopic accessories.

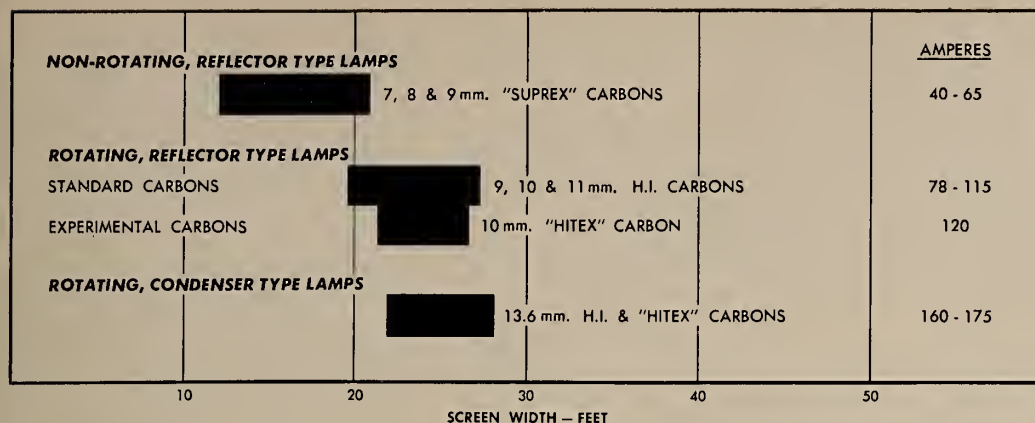


FIGURE 3

Size of Stereoscopic Screens Capable of Illumination to 9-14 Foot-Lamberts Brightness at Center of Screen—Based on Operating Conditions Producing 1 Hour Minimum Continuous Operation.

[Based on maximum light, 50% shutter transmission, 90% projection port glass, 40% polarizer and 80% viewer transmissions, typical positive carbon travel, 4 by 3 picture aspect ratio, and 125% screen reflection factor.]

factor assumed for the matte screen used for conventional projection.

The stereoscopic projection components therefore reduce the final screen brightness to a value equal to 53% (40 divided by 75 = 0.53) of that with the same projection system with a matte screen without stereoscopic accessories. In other words, the screen brightness requirement is approximately double that for conventional 35-mm projection.

The fact that separate projectors are employed for the right- and left-eye pictures does not alter the basic facts of this analysis, for each projector is subjected to this approximately 50% loss in brightness and contributes only to the brightness and picture observed by *one* eye, and the composite picture brightness visible to *both* eyes is still equal to that furnished by the individual projectors to *each* of the observer's eyes.

Should efforts to produce screens with higher reflection factor and with adequate uniformity of brightness over the theatre viewing angles be successful, then the final screen brightness figure will be increased with a corresponding decrease in the required amount of projection light.

Calculating Overall Light

On the basis of a 50% loss in picture brightness, the output of light on various size screens can be estimated by a simple proportioning of the screen widths or screen brightnesses shown in Fig. 2. Accordingly, the indicated widths of screens could be illuminated to one-half the brightness values shown and, alternatively, the various systems would illuminate screens about 70% of the widths shown to the same brightness levels

employed in Fig. 2.

Still another way of looking at the situation shows that two projection lamps with *twice* the lumen output shown in Fig. 1 will be needed to produce equivalent brightness on the same size screen as in Fig. 2, but with stereoscopic projection.

Current practice with stereoscopic motion pictures using two interlocked projectors makes it desirable to consider operating conditions which will permit one hour minimum operation of the projection lamps without interruption in order to minimize interruptions for rethreading projectors. Usually this is determined by matching the burning rate of the positive carbon to the available length of positive carbon travel permitted by the lamp design and is subject to future change with lamp modifications now being considered.

The arc current, consumption rates and lumen output for one hour minimum operating time are given in Table 1. It should be remembered that these screen light values are the full output of the projection system undiminished by shutter, film, filters or any stereoscopic accessories. A combination of these lumen outputs with the transmission and reflection factors already described for stereoscopic projection, results in the screen widths which can be illuminated to the recommended 9 to 14 foot-lamberts screen brightness range. These screen widths have been plotted on Fig. 3 for the various lamps and carbons which permit one hour continuous operation.

Removal of the limitation of one hour's operation would permit the use of all carbons at their maximum operating current, where in each case they

would produce at least 20 minutes continuous burning and would project a standard 1800-foot reel. This would increase the light from some of the more powerful trims sufficiently to permit an increase in screen width of approximately 5 feet, and would make available recommended levels of brightness for screens fully 30 feet in width. The development of a suitable magazine-type lamp, designed for joining of carbons and continuous burning from one carbon to another, may be possible, thus permitting maximum currents and adequately long burning periods.

Suggested Practice

The foregoing discussion emphasizes the need for more projection light. The revolutionary techniques are still new, and since it is not practical to develop and control everything all at once, immediate perfection cannot be expected. The new carbons which have been developed will produce considerably more screen light; their successful utilization, however, will require suitable lamps and other projection equipment.

For the present, however, acceptable levels of screen brightness for these new systems are within reach, provided the equipment necessary to operate the higher capacity carbons is installed; and provided the entire projection system, including lenses, mirrors, condensers, and port glasses, is in exact adjustment and in good clean optical condition.

VA Service Work to Altec

Altec Service Corp. has entered into a contract with the Veterans Administration covering the maintenance of motion picture and radio equipment in VA hospitals throughout the country.

IN THE SPOTLIGHT

EXHIBITORS throughout the country are watching with keen interest the outcome of the suit brought by Fanchon & Marco against St. Louis Local 143 in an effort to determine whether or not the Local can force the theatre circuit to employ three projectionists, instead of the usual two, where pictures with stereophonic sound are shown. It is the contention of many IA Locals that the successful showings of 3-D and wide-screen pictures using stereo sound depend solely upon the skill of the projectionist and that additional manpower in the projection room is necessary in order to put on a top-notch show.

In a widely-publicized address before a gathering of the Independent Theatre Owners of Ohio several months ago, Herbert Barnett, president of the SMPTE and vice-president of Cinerama, Inc., emphasized the importance of *fine* projection in the successful showings of the new processes. (See *IP* for April, 1953, p. 22.) Skill in any profession comes with experience plus expert application of one's ability in a particular field. It is a strange paradox that while the average exhibitor will splurge thousands of dollars on front-of-the-house improvements, he will balk and shy away from all thoughts of bettering the lot of the key men in his theatre — the projectionists.

- Frank J. McGuire, business representative for the newly organized IA Local on Cape Breton, Nova Scotia, known as No. 848, Glace Bay, is chairman of the committee now in process of negotiating contracts with the theatres in the Local's jurisdiction. Four contracts calling for substantial wage increases for the members have already been concluded, and additional contracts are now being negotiated.

The Local, which was granted certification by the Nova Scotia Labour Relations Board, has 14 theatres and 2 drive-ins in its jurisdiction, covering the towns of New Waterford, Port

Hawkesbury, Sydney and other neighboring communities.

- The AFL Union Label and Service Trades Department predicts that this year's Union Label Week, September 7-13, will set new records for labor and general public participation. High state and city officials throughout the country, in keeping with their close interest in union affairs and in the importance of the union label to the people of their communities, are expected to issue special proclamations calling attention to the event.

- Genaro G. Garcia, member of San Antonio Local 407, was recently installed as secretary of the Nat M. Washer Lodge, No. 1270, AF & AM. He is very active in Masonic circles, holding a 32nd degree in AASR San Antonio, Texas Consistory, is a member of the AAONMS Alzafar Temple, and is an active member during reunions of the Scottish Rite. Garcia, who is 51, has served Local 407 in several official capacities, the last was that of president for the years 1950 and 1951.

- IA West Coast studio Locals and the major producers are scheduled to meet shortly after Labor Day to negotiate on a new basic agreement.

Among the proposals to be submitted by the Locals participating in the discussions are wage increases and a formula for financing a pension fund. Roy M. Brewer, IA West Coast representative, will be in charge of negotiations.

- That honesty pays off can be proven by Marcel Fasano, member of Local 273, New Haven, Conn., who received a reward of \$100 for returning a handbag containing a considerable amount of jewelry that he found at the Yale Golf Course.

- According to a recent issue of the *AFL News-Reporter*, 76% of the workers voting in representation elections conducted by the NLRB during the first quarter of 1953 voted to be represented by labor unions in dealing with their employers.

- Fresno, Calif. Local 599 set an example of good labor-management relations when a gold life membership card in the Local was presented last month to Gerald Hardy, president of the Westland circuit. The presentation took place at a banquet given in Hardy's honor in celebration of the signing of the circuit's 19th annual contract with the Local. The new pact provides for wage boosts of from 15 to 20 cents per hour for the Local membership.

- *Recent out-of-town visitor to IP:* Clyde Cooley, secretary of Omaha, Nebr., dropped in for a chat and aired his views on the new 3-D and wide-screen processes. Cooley favors wide-screen pictures and is very enthusiastic about its acceptance in the industry.

- The sponsors of the recent testimonial dinner-dance given in honor of Mike Berkowitz, Harry Mackler, and Joe Abrams, Local 306 old-timers, donated the balance of the proceeds, after all expenses were covered, to the Harry Sherman Memorial Heart Fund of the 25-30 Club. The contribution represented a substantial sum, and we understand that the many friends throughout the country of the late Harry Sherman have been contributing regularly to the fund founded in his memory.

- The membership of Los Angeles Local 150 approved a 5-year contract with the Gilmore and Victory Drive-

STRONG LAMPS FOR 3-D FEATURE



Strong 90,000-8 (3-D) Lamps were installed at the Rivoli Theatre, Toledo, Ohio in preparation for the showing of the 3-D film, "Fort Ti." Shown above are the projectionists at the theatre, Bill Leutz (left) and Belmont Holmes, members of IA Local 228.

In Theatres at a special midnight meeting held June 25 last, thus ending a 6-months' strike against these theatres. Among other benefits the contract provides for a 12c per hour increase retroactive to October 1, 1951, an additional 15c per hour retroactive increase to October 1, 1952, and another 12c per hour increase from October 1, 1954 to September 30, 1956. The signing up of these two theatres leaves but one non-union drive-in holdout — the Radium Drive-In. Union officials are making every effort to settle all differences with the Radium management and they are confident that they will be successful in this direction very soon.

• William H. Hartnett, Sr., business representative for Ottawa Local 257, and George H. Jones, secretary for Toronto Local 173, were initiated last month into the Canadian Famous Players' 25-Year Club. The initiation took place at the beautiful St. Andrews' Golf Club in Toronto, where the newly inducted members were presented with engraved scrolls and with diamond-studded pins. In addition, they were given the choice of either a \$100 bond or a gold watch. Each year members of the 25-Year Club are eligible for

4-week vacations with pay for the duration of their employment with the company.

George Jones, of the Toronto Local, voiced the opinion of those present at the ceremonies when he stated "We in Canada are proud to be associated with such a great company."

Mrs. Hartnett and Bill Hartnett, Jr., who is assistant manager of the Regent Theatre in Ottawa, were guests at the affair.

• It was only upon the insistence of George B. Barrett, business representative for Local 170, Kansas City, Mo., that the management of the Orpheum Theatre in Kansas City, placed an extra man in the projection room during the showing of the 3-D film, "It Came From Outer Space." This is another instance of an aggressive union official sticking to his guns and fighting for what he thinks is due his members.

• New two-year contracts retroactive to February 1, 1953 between Winnipeg Local 299 and 34 exhibitors, were

approved by an arbitration board consisting of 3 members — Samuel Herbst, Local 299 nominee; S. R. Miles, exhibitor nominee and H. G. H. Smith, chairman of the board. The contracts provide for pay increases from 15 to 50 cents per hour for the first year, and for an additional 10c per hour for the second year. They also provide for extra pay for holidays, Saturdays and for relief work after 11:30 p.m. Ed L. Turner, business representative, represented Local 299 in the hearings before the arbitration board.

• Nathan D. Golden, director of the Motion Picture and Photographic Products Division of the U. S. Department of Commerce, has been chosen to represent this government at the forthcoming XIVth International Exhibition of Cinematographic Art (Venice Film Festival) in August. He will sail on the liner, the *Independence*, which leaves New York on July 23 for Naples. Golden is well-known in the industry and holds a life membership card in Cleveland Local 160.

Pension Protection — Goal of Labor

Foremost in the minds of Labor men these days is adequate pension protection, a topic which has generated intense interest in IA ranks for many years past. Herewith is the first of a series of articles which reflects the official view of the AFL.

In National Carbon Post

The National Carbon Co. has announced the appointment of J. R. Johnstone as manager of its carbon sales department. Mr. Johnstone was engaged in various sales and administrative functions before receiving his present assign-



J. R. Johnstone, recently appointed manager, carbon sales department, National Carbon Co.

ment with the National Carbon Co. division of Union Carbide and Carbon Corp.

Lighting carbons for the motion picture industry will be high among Mr. Johnstone's interest because of the increased light demands of the new techniques. Also included in his new activities will be the sale of carbon and graphite brushes for motors and generators, and carbon and graphite chemical and mechanical specialty products.

PERHAPS the most conspicuous development in recent collective bargaining history has been the rapid spread of negotiated retirement plans. As of mid-1950, about 5,000,000 organized workers were covered by contractual pension plans — a threefold increase since 1948. The number has continued to grow since then.

On the surface, this seems to represent a very substantial amount of progress toward overcoming the economic hazards of old age. Unfortunately, the figures are misleading. The *restrictions* and *limitations* of most of these plans are such that, out of the more than 5,000,000 workers described as being "covered," very few have any *real* assurance of ever actually receiving a pension.

Social Security Not Enough

The figures are, nevertheless, an indication of the manner in which unions are trying to meet the very real and human problems faced by their older members. Few union men can see their fellow-workers tossed out of the shop on

their Social Security — with poverty and dependence awaiting them as the end-reward of a long, productive and dues-paying work life — without feeling that something should be done about it.

The Social Security system, even after recent improvements, still remains pitifully inadequate. A private pension plan will, therefore, seem to many to provide a sound and logical solution to the financial problems of the aged. Older members will naturally favor the idea. Younger members who can see far enough ahead to consider the time when they will be in the same boat, will also be inclined to approve.

The subject of pension plans is not a simple one. The union official must rely to a large extent upon the "experts" who do that sort of work for a living. Up to a point, he will have to take their findings at face value.

The paternalistic type of employer usually regards a pension as a gift or gratuity granted as an act of benevolence, or mortal duty, to his "old and

(Continued on page 26)

Water-Cooling for Projection Carbons

What Are the Facts?

By CHARLES A. HAHN

J. E. McAuley Mfg. Co., Chicago, Ill.

FREQUENTLY we open our favorite trade journal (IP) and are confronted with advertisements proclaiming the miraculous advantages to be derived through the use of "screw-on" water carbon-cooling devices, the use of which will result in (1) more light (how?); (2) cool operation (where?); (3) slower carbon consumption (why?); and, strangely enough, that such units are essential for 3-D projection (why?).

Nowhere in the reputable scientific literature is there any authentic data which would substantiate such claims. We're now talking about the use of water-cooled positive carbon contacts in combination with the type and kind of carbons (coppered or uncoated) at present available and used universally for projection arclamp service.

Let's Look at the Record

To the contrary, there does exist undisputable scientific data which

proves that the use of contact water-cooling, in combination with *standard* projection carbons, actually produces results which refute the claims advanced by those who exploit such devices. Results, easily measurable by any serious worker in the field, have been spread upon the record in fulsome measure.

For example, in the *SMPE Journal* for April, 1949 (pages 395 through 416) there appear two articles on this very topic — one authored by Messrs. Jones and Bowditch, of National Carbon Co., and the other by Wolfgang Finkelburg, of the Research and Development Labs., Fort Belvoir, Va. (These articles appeared in IP in the June and July, 1949, issues.)

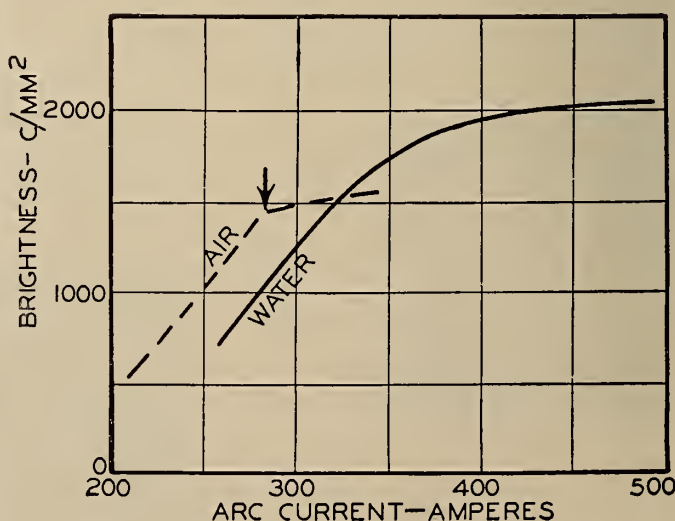
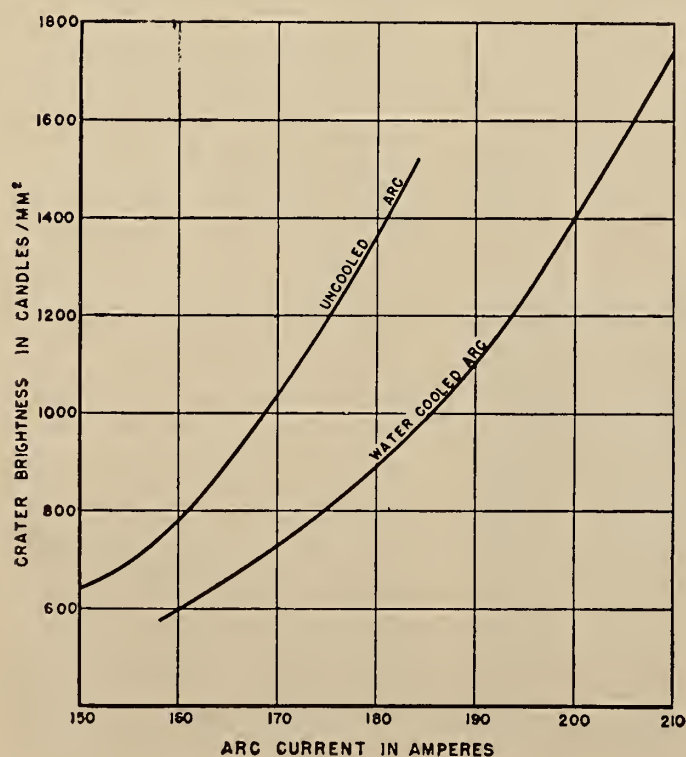
The conclusion of the Jones and Bowditch study was that, when burning our present day *standard* projection carbons or the *special experimental* high-brightness type of carbon, the introduction of water-cooling always *reduced* the total volume of light when identical amperages were used at the arc. Hence, at the current rating of standard air-cooled carbon

trims, the use of water-cooling with even the high-brightness type carbons resulted in reducing their crater brilliance.

Arc Efficiency Reduced

It was definitely indicated by Finkelburg that the uncooled arc is by far the most efficient at 180 amperes (the top amperage for 13-mm *present-day* projection carbons). When water-cooling was used, it became necessary to raise the arc amperage to 200 in order to reach the *same* level of crater brilliance as was produced by the uncooled arc burning at 180 amperes. It was shown, with immaterial exceptions, that the uncooled, normal arc, when operated within or at the current limits now generally used for projection purposes throughout the country, produces superior results than when water-cooling was employed.

Both articles indicate further that, when any real gain was made through the use of water-cooling, it was only under certain specific operational conditions requiring that up to 290 amperes be used at the arc — and then



LEFT: Comparison of crater brightness of cooled and uncooled arcs at equal currents.

RIGHT: Comparison of air- and water-cooled operation for new higher-current 13.6-mm "high-brightness" carbon.

only in conjunction with specially-made experimental carbons of the high-brightness type. High-brightness carbons have a very high consumption rate, about 40 inches per hour at 280 amperes, are extremely expensive and are *not* in regular production.

Realistic Outlook Needed

Compare this with the amperage level now generally used for projection up to 180 amperes with the 13.6-mm positive carbon. Let's get realistic.

Consider the type of arclamps that would be required to withstand the heat of such high amperages. What means are to be employed to eliminate heat-on-film damage? What about the extensive and expensive changes required in electrical house wiring? And what about the unavoidable necessity for larger-capacity generators?

All these changes would be necessary to accommodate a carbon that is consumed at approximately *twice* the present burning rate and at least *twice* the present cost. Can this make water-carbon-cooling essential to 3-D when, with the slower burning carbon, we are now sacrificing screen illumination just to make the carbons suffice for a 5,000-foot reel of film?

Take particular notice of the fact that the lamps used by Jones and Bowditch, and by Finkelnburg, were especially designed and made with the water-cooling arrangement built-in. Also, there was provision to cool the negative as well as the positive carbon. No "screw-on," single-carbon, water-cooling arrangement was used.

The burning of projection carbon trim has much in common with the burning of coal for heat: the more you burn over a given period of time, the more heat-light you will get from it. In the case of carbon arcs, the main product we seek through their consumption is *light*, and its quantity or volume is determined by the amount of carbon that is consumed.

Increasing Total Light

So you can see why an increase in total light requires larger diameter carbon combinations. These are then burned at higher amperages, further increasing the total amount of carbon consumed. All things being equal, we doubt if anybody can reduce the consumption rate of a fuel and still come up with a gain in the output of the product you burn it for. It's as simple as that.

I would be agreeable, if any manufacturer of contact water-cooling de-

vices would also agree, to submit lamps for testing at identical amperages and equipped with and without "screw-on" contact coolers to an established and impartial testing laboratory, such as the Armour Institute in Chicago, with the understanding that we would publicize the results of the "with" and "without" tests, and also name the product. I would gladly pay the testing cost if use of the water-cooling device actually does produce more light, cooler operation, or result in slower carbon consumption. If it doesn't do the job, *they* pay the bill.

Underwriters' Laboratory

Also important is the attitude of the

Underwriters' Laboratory. When such devices are installed on projection arclamps already approved for operation *without them*, the blanket approval of the lamp automatically become null and void. This is also true when carbon-saving devices are installed, when metal is used in place of glass reflectors, or, for that matter, if any kind of alteration is made in the construction of the lamp from its original form.

At this date, I know of no complete projection arclamp employing contact water-cooling nor any "screw-on" contact water-cooling device that is now or ever was listed by the Underwriters' Laboratory for unrestricted use.



To the Editor of IP:

Recently a projectionist wrote in and asked us why Motiograph, Inc., like other projector manufacturers, did not provide our AA projectors with studio guides.

You are probably familiar with the fact that our prewar Motiograph, the Model K, employed studio guides. We found that those studio guides were very fine when projectionists were running brand-new prints, but when film shrinkage took place, they actually ceased to have any value in controlling sideways of the film. The sideways, of course, brought about a rapid sideways jiggle

of the picture on the screen. The amount of weaving actually increased as the studio guides became grooved.

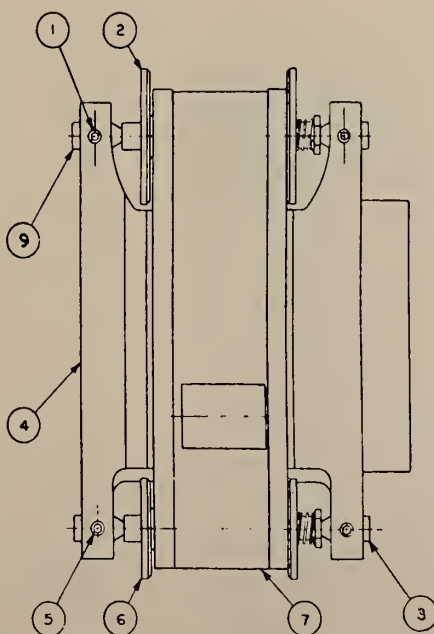
In the AA, the lateral guiding of the film over the tracks is accomplished by the two guide roller assemblies, Items 2 and 6 in the accompanying illustration. Each has a fixed flange, or roller half, for the soundtrack side of film, and a moveable flange under the small spring tension for the opposite side, to accommodate films having various degrees of shrinkage without producing film buckling or failure of the guiding action.

Sideways Effectively Controlled

The roller assemblies are relatively close to the aperture opening and are, we believe, much more effective in eliminating film sideways than non-rotating fixed types of lateral guides. The rollers are large in diameter so as to derive sufficient turning torque from the moving film, and are fabricated from very tough and thoroughly hardened steel alloy to resist wear. They turn freely on hardened pivot-type bearings lubricated internally through small openings in the tips from grease reservoirs within the bodies of the bearings.

More than 2000 theatres have proven, we think, that our method of lateral guiding of the film is quite superior to the method of guiding the film by means of studio tracks. The only times when our method has not worked perfectly was where periodic cleaning and lubrication of the bearings of the guide roller assemblies were not given.

This communication is a verbatim



Motiograph AA track assembly

(Continued on page 26)

Outline of 16-mm Projection

Presenting some comments on the history and operation of 16-mm projectors, abstracted from a very complete text-book on the subject.*

IV

ASIDE from provisions of excluding light from the room until the general level of illumination is of the order indicated, it is particularly necessary to make sure that no narrow beams of light (such as sunlight) enter the room to produce bright spots on the walls near the screen or strike other objects in the room from which noticeable reflections may be obtained.

For audience comfort, the screen should be by far the brightest object in the room. It is also preferable for the screen to be placed at least several feet away from a nearby wall so that the light "sprayed about" by the screen does not reveal nearby wall detail.

The Non-Theatrical Equipment Committee of the Society of Motion Picture and Television Engineers published a report in the *Journal of the Society* in July 1941 that provides specific and authentic recommendations relating to the use of 16-mm projectors in classrooms. Much of the data presented is applicable to any kind of 16-mm projection and may be used as a guide to equipment selection and use. One very important point discussed is the location of the audience relative to the screen; for convenience, audience location is described in terms of screen widths. In the case of a machine with a 750-w. lamp, the proper screen width is 5 ft. for 10 ft.-lamberts screen brightness.

SMPTE Recommendations

(1) The nearest row of seats shall be no closer than 2 screen-widths from the screen; a preferred minimum distance is 2.5 screen-widths. In terms of the 5-ft. screen, the first row of seats should be not less than 10 ft. away, with 12.5 ft. as the preferred minimum.)

(2) The farthest row seats shall be no farther than 6 screen-widths from the screen; a preferred maximum distance is 5.5 screen-widths. In terms of the 5-ft. screen, the last row of seats should be not more than 30 ft. away,

with 27.5 ft. as the preferred maximum.)

(3) No seat shall be farther away from the line between the projector and the screen than its distance from the screen. This is equivalent to an angle of 30° on either side of the projection axis.

Although it is definitely undesirable to do so, many screens are operating considerably below the 10 ft.-lambert brightness level. In a number of cases the screen chosen is entirely too large for the projector. In the other cases, improvement can be made by

making certain that the terminal voltage of the lamp is in strict accordance with the lamp voltage rating. Projection lamps can be obtained in rated voltages from 105 to 130 in 5. v. steps; it is very desirable that the correct lamp be used in all projection, especially in the projection of color film. Should the screen brightness level drop below 6 ft.-lamberts, the cause should be determined and the condition corrected.

The recommended value of 10 ft.-lamberts should not be considered inflexible. Some films may warrant a somewhat higher value because they are dense, while others may warrant a somewhat lower value because they are light. Many prints are made light intentionally to attempt to compensate in some degree for possible poor screen brightness of the projector;

Multiple Magnetic Tracks with Picture Opposed

Although multiple sound tracks on a single strip of film along with the picture may prove practical, there are many technical disadvantages, and the major studios may decide against using this system, it was asserted recently by D. J. White, president of the Magnasync Mfg. Co., North Hollywood.

"Our experience as one of the largest manufacturers of magnetic film recording and reproducing devices makes us wary of magnetic sound tracks outside of and too close to the sprocket holes," he said. As the first group to present a perfected 16-mm magnetic film recorder before the SMPTE (May 1948), Magnasync engineers are well qualified to

judge the relative merits of most magnetic film devices, White pointed out.

"Exhibitors should be made aware," he added, "that the *film transport* portion of their projectors would be rendered obsolete if the proposed combination film and multiple sound track system were to win acceptance. Magnetic sound tracks will deteriorate rapidly if caused to pass over the hardened steel components of standard projectors. Much research is ahead of us before we develop projector transports with non-ferrous (non-magnetic) materials which will stand up under the beating taken by projector movements.

Film Transport Unadaptable

"The present separate reproducer standard may well continue regardless of progress in magnetic-projector soundheads. Theatres will be equipped, projectionists become familiar with the technique, and in general a great deal of momentum developed in favor of the separate magnetic sound system."

The Magnasync company produces the "Magnaphonic Theatre System" which is described as a unitized package starting with a 3-channel, 35-mm reproducer priced at \$2,350. Pre-amplifiers, control panels, monitor amplifiers, power amplifiers and speakers are added according to the requirements of the individual theatre. Complete Magnaphonic systems are available starting at \$5,300.

The company also points out that the equipment could be adjusted at minimum expense for use with any of the proposed new systems, as yet only in the "thinking" stage, if they come into use.



●
Magnasync
magnetic
reproducer
No. 335-T, as
viewed from
front
●

* Cond. from "16-mm Sound Motion Pictures," by W. H. Offenhauser, Jr., published by Interscience Publishers, Inc., New York.

such prints are inferior in pictorial quality in that much of the shadow detail is lost. If some degree of deviation is unavoidable, it is preferable that it shall be in the direction of greater rather than lesser screen brightness.

16-mm Sound Reproduction

Good sound reproduction involves two major characteristics; its volume, and its clarity and freedom from distortion. With a good film on a good machine, the volume can be controlled by the volume control; the quality or tonal balance by means of the tone control. Both are partly dependent upon the acoustical conditions of the room or projection space. The volume of sound needed for most comfortable and satisfactory reproduction depends upon several factors other than room size. One of the most important is the reverberation characteristics of the room, which are dependent to a considerable degree upon the amount and the kind of sound-absorbing material present.

A room in which the walls, ceiling, and floor are all of hard materials (cement, plaster, or wood) requires relatively little sound energy from the loudspeaker to produce a loud effect. A particular sound being reflected and re-reflected numerous times loses some of its energy with each reflection and finally becomes inaudible. A prior sound has not ceased before a subsequent sound appears; sound heard under these conditions does not have the pleasing clearness that occurs in the well-furnished living room of a home where there are curtains, rugs, overstuffed furniture, and cushioning materials that absorb sound to a considerable degree. Such sound may be described as "blurred."

A reasonable starting point for sound projection is a room in which it is easy for two persons — one at either end — to converse in an ordinary tone of voice without difficulty when they are not looking directly at one another. (This avoids lip reading.)

[TO BE CONTINUED]

16-mm Lending Service—N. Y. Library

A library of 16-mm documentary films is now available at the New York Public Library. Under this new lending service, made possible by a grant from the Ford Foundation for Adult Education, films explaining American history and ideals will be offered for loan to non-profit community groups.



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Ready for Production Nord Single-Film 3-D Process

The Nord system of projecting 3-D from a single film strip was demonstrated recently in New York and Hollywood. Requiring only a single 35-mm projector equipped with a special attachment in front and a corrective lens, the system is said to make possible a considerable reduction in the cost of producing and exhibiting 3-D films.

The system places two stereo images side by side on one 35-mm film strip. In the production process the images are turned and placed vertically or side-

ways on the film frame so as to fill the entire area of the frame.

Nord asserts that it has a number of advantages over the present double-film methods. Both images retain exact synchronization on the screen because they are locked together on the film frame and in the Nord projection converter — a device placed before the projector that splits the beam from the projection lens and simultaneously transmits the two images to the screen.

Converting Existing Films

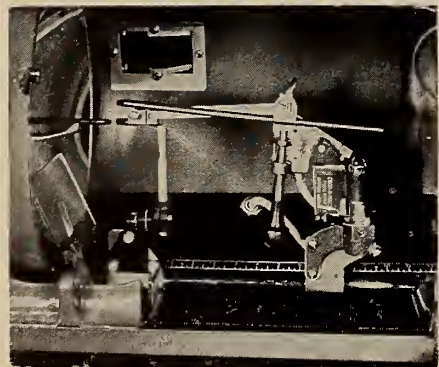
Nord promises that any 3-D film now ready can be used in the Nord system if the double-film images are transferred to a single film strip by an optical printing process. Nord states that 3-D units will be rolling off the production line within 30 days after the announcement in Hollywood that prints will be made available. Although the price of the projection equipment is not yet set, it is said to be low enough to make it available to even the smallest theatres.

As in other 3-D systems, Polaroid filters and glasses, and a metallic, highly directional screen are required.

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RCA's New Wide-Arc Lamp

A new RCA Wide-Arc lamp system, a type of lamp used in recent Cinema-Scope demonstrations, is now available for wide-screen, 3-D, and drive-in theatre use. This lamp is said to provide sufficient light to illuminate oversized screens up to 70 feet in width when operating at a maximum of 128 amperes using a Hitex 10-mm positive carbon.

Features of the Wide-Arc lamp include special cooling devices, a large 16-inch diameter reflector, and a reliable feed mechanism which rotates the positive carbon at a speed of 15 revolutions per minute compared to about 8 revolutions for the RCA Brite-Arc lamp.

To reduce heat on the film, the lamp employs heat reflecting glass with a motor-driven fan mounted between the lamp and the shutter housing. The system also uses a new RCA water circulator which operates directly from the arc voltage. When D.C. power is supplied to the lamp, the water circulator starts automatically.

New Stack Assembly

Heat generated by the Hitex carbons is removed from the lamphouse by a

IA ELECTIONS

LOCAL 509, DULUTH, MINN.

William C. Call, *pres.*; Edgar Chubbuck, *vice-pres.*; Russell Gran, *rec.-sec.*; Ernest Poling, *fin.-sec.*; Fred Daneiko, *treas.*; Hal Olson, *bus. rep.*, and Walter Quick, *sgt.-at-arms.*

new stack assembly located immediately above the arc flame, an arrangement that is said to keep the reflector and the inside of the lamphouse free of combustion dust. Cool air is drawn in through a series of ventilating holes toward the bottom. Dowser control handles are located on both sides of the lamp at the screen end.

The lamp can be operated up to 98 amperes with standard 10-mm carbons without need for the heat-reflecting glass or motor fan. Two new motor generators to power the Wide-Arc lamp were also announced by RCA. They are the type 19 motor generator for use on a 208-volt line, and the Type 20 for operation on a 220-volt line. Both provide 125/250 ampere, 90-volt outputs.

New Strong Rectifiers

A new line of heavy-duty rectifiers, designed for continuous operation during 3-D and wide-screen projection, and also for drive-ins, has been announced by the Strong Electric Corp.

Three of these rectifiers are of the selenium plate type; one is of the tube type. All of the selenium rectifiers may be used with angular or coaxial trim lamps. They are rated at 105-135 amperes for 11-mm carbons or 10-mm "Hitex" carbons, 90-105 amperes for 10-mm carbons, and 75-90 amperes for 9-mm carbons. The continuous-duty, tube-type rectifier has a capacity of 75-85 amperes on 3-phase, 220-volt current.

Transformer taps provide adjustment to compensate for supply-voltage variations through a range of 10% above or 10% below the rated A.C. input voltage throughout the output-rating range. All four of the rectifiers feature automatic, fan air cooling.



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OBITUARIES

RAY E. FERGUSON, 57, member of Projectionists' Local 509, Duluth, Minn., for the past 35 years, died June 20 of carbon monoxide poisoning while working on his car. Ferguson was active in union affairs having served as president and business representative for the Local during the past years, and was a delegate to the Federated Trades Assembly. He was a member of AAD Temple Shrine wrecking crew; Masonic Lodge; Duluth Commandery No. 18; Knights Templar and Lakeview Lodge No. 92, and of the Royal Arch Masons.

ALLEN J. TINDAL, 56, business representative for Local 253, Rochester, N. Y., died June 16 of a heart attack. Tindal became a member of Local 253 in 1931 and served as president for the years 1947 and 1948.

A native of Ogdensburg, N. Y., he came to Rochester 25 years ago, and for the past 20 years worked as projectionist at the Liberty Theatre. He was a past master and current secretary of Orpheus Lodge of the Masons; past grand steward of the Grand Order of Masons of the State of New York, and was a member of the Flower City Link, Order of the Golden Chain.

MIKE BERKOWITZ, 79, veteran member of New York Local 306 and past president of the 25-30 Club, succumbed July 16 to a lingering illness. Although his death was not unexpected, it came nevertheless as a shock to his many friends in projection circles. The career of Mike Berkowitz encompassed a span of many years and it was only his modesty that prevented him from receiving recognition in the industry for his many outstanding contributions to the art. His last public appearance was at a testimonial dinner tendered in his honor about two months ago. The death of Mike Berkowitz ended the career of one of the truly "grand old men" of show business.

Motiograph 3-D Booklet

An illustrated booklet on 3-D motion picture projection is available from Motiograph, Inc., Chicago. The booklet gives a brief history of the various new screen techniques and describes their present status. Particular attention is paid to 3-D projection. There is detailed coverage and illustration of Motiograph equipment for showing 3-D films.

Among the subjects covered are: 3-D theatre equipment, 3-D in drive-in theatres, 3-D interlocks, installation, over-size magazines, new arclamps, generators and stereophonic sound.

Altec Stereosound Clinics

The fourth in a series of stereophonic sound clinics, recently inaugurated by the Altec Service Corp., was held last month at the Saenger Theatre, New Orleans, in conjunction with the CinemaScope demonstration in that city. Altec also announced that it has installed stereosound in a large number of Pennsylvania theatres.



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LETTERS TO THE EDITOR

(Continued from page 21)

transcript of our reply to the inquiring projectionist, and is sent to you with the thought that our method of guiding the film in the AA projector will be of interest to many of your projectionist readers.

FRED C. MATTHEWS
Motiograph, Inc., Chicago, Illinois.

To the Editor of IP:

I would like to point out that the diagram and accompanying explanation that appears on page 12 of the June issue for IP *does not* illustrate the convergence obtained, as you say "by converging the camera lenses at a point much closer to the viewer than the objects on the same plane as the screen."

What your diagram *does* correctly illustrate is the normal configuration of left- and right-eye images in a superimposed stereogram, such as a polarized-light 3-D picture. This configuration of images results in convergence of the spectator's two eyes as he looks at the "near" objects in the projected picture. And this has nothing whatever to do with the convergence of camera lenses (or diagonal mirrors) as employed in

the "Natural Vision" technique used by Warner Bros. for filming *House of Wax*.

The effectiveness of the sideshow-barker sequence in *House of Wax* was considerably *reduced* by convergence of the camera lenses. Convergence of the camera lenses magnifies and *throws back into the distance* all foreground objects. This is bad enough, but worse, the technique makes distant backgrounds almost impossible to look at by forcing the optical axes of the observer's two eyes to diverge. This is strictly and very obviously "agin nature," for even the most distant objects require the lines of sight of our two eyes to become only parallel.

ROBERT A. MITCHELL

To the Editor of IP:

I congratulate you on the struggle you are making to bring about standardization of 3-D and wide-screen equipment. The haste of manufacturers to rush new products to market is blinding them to the point where we will all suffer for the lack of a little horse sense on their part.

One local theatre ran "Wax" using the mechanical interlock, and there was a terrific vibration from the telescoping rod that was transmitted to the screen. The projectionists there were crowded for set-up time, and it is hoped that the

vibration problem can be cleared up in the future. If possible would you tell me where I can get information on Selsyn interlocks, as I expect to work with them in future 3-D showings?

Again may I say more power to your pen. You can bank on the boys in the projection room to back you. We look forward to IP each month to see what you have to say.

HUGH L. PENFOLD
Sault Ste. Marie, Ont., Canada.

[Precise data anent Selsyn interlocks is available from Mr. Ken G. Parks, General Electric Co., 570 Lexington Ave., New York, 22, N. Y. — Ed.]

PENSION PROTECTION

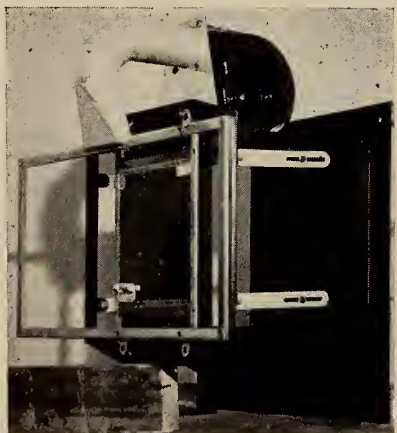
(Continued from page 19)

faithful" employees — in other words, as a bone for old dog Tray. This is a view which labor cannot accept, for it runs directly counter to the basic principles of the trade union movement.

Unions do not bargain for gifts or gratuities; they bargain for wages and *conditions* of employment. The negotiation of the labor contract is a transaction between equal parties in which equal values are exchanged — not a petition to a benefactor for charity towards a group of old retainers.

When a pension plan is brought within the scope of the agreement, both parties thereby acknowledge that it is in fact a part of the hire which the workers are to receive *in exchange* for their labor. It is not "free" and they do not get "something for nothing," as an act of grace on the part of the employer. They earn it and pay the employer for it by doing the work which constitutes *their* end of the contract.

The performance of that work is all the employer has a right to expect in return for his contributions to the pension fund. The amounts contributed by the employer to the fund, to finance the pension credits accumulated by the group during the term of the contract, should therefore be an irrevocable payment which the employer cannot withhold or



PATENT PENDING

The DIT-MCO 3-D Filter Alignment and Cooling Mechanism is designed to properly align the filter at any position or angle for maximum focus and light, and to lock it in that adjustment for all future use. The cooling assembly gives ample and even distribution on the filter, as requested by the top engineers of the industry.

This mechanism has sufficient width to accept the wide angle projection of Cinerama or Cinema-Scope. For standard projection, all the projectionist has to do is to slide filter to non-operating side.

Bottom of housing slants downward at a 25-degree angle toward screen (for indoor theatres) so that regardless of the angle of projection, the beam will pass through freely. For Drive-In Theatres the slant is upward so that the beam will pass through freely to the screen tower.

The filter frame has eight adjustments, so that the filter may be placed in proper position for maximum light and focus — **AND LOCKED**. These eight adjustments are:

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In and Out — Up and Down —
Left or Right at angle to horizontal

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recapture, just as he cannot withhold or recapture cash wage payments.

The workers' interest in the negotiated plan is equally strong regardless of whether the fund is set up formally on a so-called "contributory" or on a "non-contributory" basis. In the sense that the contributions paid in by the employer have been earned by the workers, they actually pay the full amount of the cost in either case.

Worker Should Have Voice

Likewise, the workers covered by the plan are properly entitled, through their union representatives, to a forceful voice in the control and management of the fund. This right is just as clear in the case of a negotiated plan as if it would be in the case of a fund which the workers might set up entirely through their own resources — outside the shop and without employer interference — with money which they might elect to set aside out of their cash wages.

As a matter of fact, one of the practical alternatives to the negotiation of a union-management plan, based on employer contributions, is the negotiation of an equivalent amount as an increase in current cash pay, and the use of that amount — through an increase in dues or special assessments — to set up a strictly intra-union fund.

About the only advantage to bargaining on pensions, where all the terms of the plan depend on employer agreement, lie in considerations of administrative convenience, plus the fact that employer contributions to a pension fund are not currently taxable to workers as income, as they would be if taken in the form of cash pay.

Management's Viewpoint

Pensions are a labor cost item, like all of the other economic terms of the working agreement. Viewed solely from this standpoint, it should make little real difference to the employer whether that cost is incurred in the form of contributions to a pension fund, or in the form of higher wages, paid vacations, a health insurance plan, or a reduction in standard working hours.

Under normal conditions most unions must eventually decide whether the interests of the members would be better served by going after a pension or by concentrating on the task of improving the wage scale. This is a decision which each union must make for itself, in the light of its own particular circumstances.

VISIBILITY FACTORS

(Continued from page 13)

instinctively examines that particular lens-surface whenever his pictures seem to lack "snap."

IMAGE-DEFINITION

The *definition* of the image on a movie screen depends upon a number of factors; and if a single one of them is below par the picture will suffer.

First, the cinematographer has a camera-lens to focus in order to get the sharpest possible image on the negative. Studio cameramen are very fussy about focus, and the lenses they use are the very best. Poor focus is seldom encountered in professional negatives, though there are cases of deliberate "soft focus" and instances where the cameraman is forced to compromise between foreground and background focus. The projectionist should remember that certain aged female "stars" wouldn't be in business today if it were not for the soft-focus

lens and subdued lighting. The make-up man can't do everything.

Second, the graininess of negative and positive film emulsions limits their resolving power. When pictures are conspicuously grainy, the negative should be blamed. Positive emulsions are the finest-grained of all; very "fast" panchromatic negative emulsions the coarsest-grained. Extremely fast negatives are seldom used, however, except in newsreel work under very poor lighting conditions.

Fast Emulsion Graininess

Fast emulsions are made by "baking" regular, slow emulsions. That is, the suspension of silver bromide in gelatine is heated for a long period of

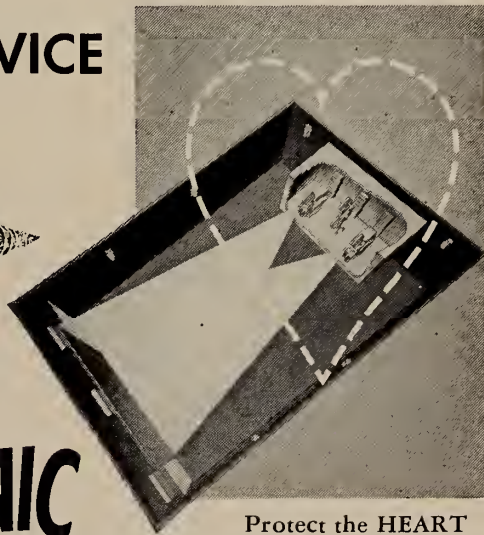
CinemaScope for Army Theatres

U. S. Army and Air Force Motion Picture Service is converting more than 400 of its theatres to accommodate the CinemaScope system of wide-screen projection. Theatres to be converted are located in the United States, Hawaii, and Alaska, according to Fred Bund, Jr., chief of the Army Motion Picture Service.

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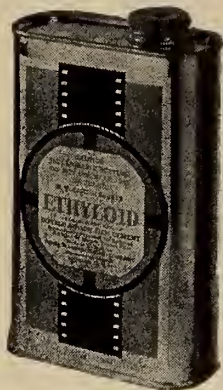
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time. This treatment also causes the silver bromide crystals to clump together into larger crystals, thus resulting in a coarse-grained emulsion.

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Color films have less graininess than single-emulsion black-and-white films, but that does not mean that they possess superior definition. On the contrary, the best "monopack" color film has slightly less resolving power than the finest-grained black-and-white. The difference is too slight, however, to be of practical interest in projection.

Poor image-definition frequently arises in the printing process. This is sometimes due to slippage between the negative and the raw positive in contact-printing, and sometimes to poor optical adjustments in projection-printing.

Poor Definition Causes

There are eight causes of poor definition arising in the projection room: (1) a poor-quality lens incapable of good image-formation in a flat field; (2) a dirty lens; (3) projectionist inattention to focus; (4) worn film-gate runners and tension-pads which fail to hold the film flat over the aperture and square to the lens; (5) rapid in-and-out of focus flutter of the film in the gate caused by heat; (6) a worn single-bearing intermittent which causes a rapid vibration of the image; (7) poorly designed air-cooling apparatus which causes the film to flutter, and (8) defective and soiled projector-port glasses.

STEADINESS OF IMAGE

Jumpy pictures were overlooked as an inherent characteristic of motion pictures — once upon a time. Not so, today. Projection cannot be regarded as wholly satisfactory unless it is perfectly rock-steady.

Rock-steady pictures require intermittent movements of good manufacture properly adjusted and lubricated. Drive gears and intermittent sprockets

should be replaced whenever wear is detected in these parts. Special attention must also be given to film-gates, tension-pads, and guide-rollers.

CAUTION! Projectionists operating on one of the most widely used makes of projector should guard against leaving the framing adjustment in one position — the midway position, for example — year in and year out. Best to change its position at least once a month in order to prevent a peculiar type of either sprocket wear or driving-gear wear which results in a trembling picture (6 small vertical jiggles per second) *whenever the picture is framed up or down to a new position.*

The cause of this strange trouble has not yet been determined exactly, although it is more common than the writer first thought. The effect is the same as that of a bent star-wheel shaft or a lopsided sprocket, but it appears only when the framing position is changed. Readers are invited to offer their opinions on this.

Rock-Steady 3-D Needed

Absolutely rock-steady projection is a prime requisite for polarized-light 3-D employing two separate films. Movements of one image relative to the other results in visual fatigue. Differences in side-weave make objects in the picture recede and approach. Cinerama has had troubles aplenty with jumpy pictures on its wide 3-image screen. The special Cinerama camera, not the Century movie projectors, has been blamed.

CUTOFF-FREQUENCY

If projection-light were cut off from the screen only during the film-pull-down periods, shutter-flicker would be terrific. A frequency of 24 cutoffs per second is much too low to be tolerated by any audience. To correct this condition, projector designers doubled the

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frequency of cutoff by adding an extra blade to the shutter. Thus we have a master blade which cuts off during the film-pulldown and a cutoff blade which cuts off in the middle of the exposure-period of each film-frame. The two blades are absolutely identical in width.

The use of the cutoff-blade wastes half of the light (the master alone wastes one quarter of the light, and the cutoff blade one quarter), but it increases cutoff-frequency to 48 cycles per second, thus reducing our perception of the rapid flicker produced by the revolving shutter.

Shutter-flicker becomes less visible when screen illumination is decreased, more visible when light is increased. When the brightness is 15 foot-lamberts, the brightness of the brightest highlights in pictures is about 8 foot-lamberts. Tests have demonstrated that shutter-flicker virtually disappears at a frequency of from 70 to 90 cyc./sec. at 8 FL. for direct vision, and from 200 to 300 cyc./sec. at 8 FL. for extreme peripheral vision.

5-to-1 Intermittents

This writer has long advocated that

conventional 3-to-1 intermittent movements be junked in favor of 5-to-1 movements in order to effect quicker pulldowns of the film and longer "rest" periods. This would permit the use of 3-blade shutters having a cutoff-frequency of 72 cyc./sec. at standard film-speed of 24 frames per second. Shutter-flicker would practically vanish, and picture-illumination would not be reduced. In fact, drive-ins and other large theatres would find 5-to-1 intermittents advantageous. When used with narrow-blade 2-blade shutters (regular 48 cutoffs per second), light-transmission could be increased from the present-day 50% to fully 66.67%.

The reduction of flicker, however, is the more valuable application of the 5-to-1 intermittent movement. Such movements are practicable. Why, then, do we not have them? That's what the writer has been trying, unsuccessfully, to find out.

"KEYSTONE" DISTORTION

Unless the optical axis of a movie projector intercepts the screen squarely in the middle, the picture will be more or less distorted. When the projection room is higher than the screen, the projectors must tilt downward. This elongates the picture and, when wide-angle (short-focus) lenses are used, the picture will be wider at the bottom than at the top.

Up-tilted drive-in projectors produce an identical elongation, but result in a widening at the top of the picture.

Vertical projection angles not in excess of 15 degrees do not produce enough "keystone" distortion to impair the quality of the picture. Horizontal projection angles, however, are far more deleterious. We meet with these only in the very few theatres having projection rooms located off to one side of the center-line of the auditorium.

And yet projection from normally centered projection rooms involves slight horizontal angles. Where there are two projectors, one of them is placed a few feet to one side of the center-line, and the other an equal dis-

tance to the other side. The angles involved are too small to matter in conventional projection, but they may prove serious in wide theatres having large screens to good image-superposition in 3-D (Natural Vision) projection. The effect is to produce a blurring of the picture at both sides of the Natural Vision screen, the blur increasing with the distance from the center of the screen.

PERSPECTIVE DISTORTION

A theatre patron seated far from the center-line of the auditorium experiences a distorted view of the picture which is absent for patrons seated in the middle of the auditorium. To him the picture has become compressed — actors appear abnormally thin and tall. Curvaceous actresses look like

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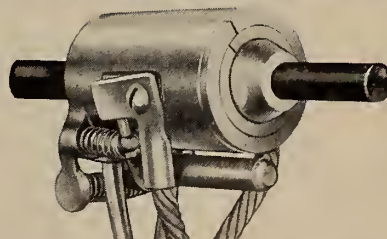
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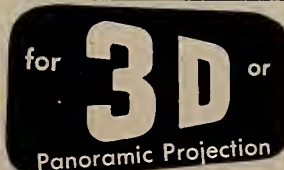
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animated broomsticks. Circles look like elongated rectangles.

This visual effect, which becomes intolerably aggravated when a screen is viewed at an angle greater than 30 degrees, is called "foreshortening." The side seats down front are at the greatest disadvantage in this respect. Patrons avoid them whenever possible.

Curved-screen projection (Cinerama and CinemaScope) combine keystone and perspective distortion to produce some mighty weird results. Straight lines are "bowed," and actors walking from one side of the screen to the other grow progressively skinnier or more plump when the picture is viewed from a side seat. A *flat* wide screen is free from some of these very objectionable faults.

3-D LIGHTING POINTERS

Time will tell if exhibitors will be willing to sacrifice about half of their seating capacity to accommodate the peculiarities of 3-D. This writer suspects that many exhibitors will retain their side and balcony seats until the public learns to avoid them during 3-D showings. Much of the merciless "panning" of "Bwana Devil" received may have been due to injudicious seating of the audience. A conscientious exhibitor will rope off the side seats out of consideration for the audience and the future of his business; but exhibitors of this character are as rare as hen's teeth.

As far as conventional projection is concerned, the actual distribution of light *on* the screen is of prime importance. It is also another of the many pitfalls in the path of polarized-light 3-D projected *via* two separate films. "Vignetted," or "hot-spot," projection, a necessary evil in mammoth drive-ins, has marred the perfection of theatre movies for many years.

Tv enjoys perfectly uniform picture illumination; and this is a point in Tv's favor. Movie side-to-center light-distribution of only 50 or 60% is still with us even though lamps can be purchased having a distribution (side-to-center) of as high as 80%. But even this can hardly be considered good enough in these days of rapidly improving Tv.

Good Light Distribution

There is no valid reason why the almost perfect light-distribution characteristics to which we were accustomed in the days of low-intensity arcs should not be transferred to high-in-

tensity lamps. Optical conditions are different in high-intensity lamps, of course, because the soft cores of low-intensity positive carbons resulted in craters less brilliant in their centers than in their outer regions. With high-intensity it is the other way around—the middle of the crater represents the thickest portion of the luminous ball of ionized gas, and this is much brighter than the glowing shell of the carbon itself.

Whether the screen be masked with black velour in the usual way or surrounded by a light-reflecting cove, the more evenly the picture is lighted, the better it will look. After all, vignetting can be done by the cameraman whenever it is required for dramatic emphasis.

One of the prime requisites for satisfactory 3-D is that the two superposed images of the stereo pair have the same brightness and light-distribution characteristics. If hot-spot lighting be inflicted upon 3-D, then the projectionist must take special pains to make the two hot-spots coincide — else patrons will begin wiping their Polaroid spectacles with the idea that popcorn hulls must have lodged thereon.

Balanced 3-D Lighting

It is extremely difficult to operate two arclamps at the same time and keep their light-output equal and con-

stant. If the projectionist succeeds in keeping the brightness-difference under 5%, no one will notice any dissimilarity. Let the difference exceed 5%, and 3-D patrons will begin complaining that stereo movies are hard on the eyes. Minute structural differences in mirrors, carbons, and lenses can, and very often do, cause the two projectors of a pair to vary in light-output by as much as 10 or 15% either way. The possibility of the projectors becoming mismatched in light-output by a difference of from 20 to 30% is ever present in some cases, although such great differences are rare. Spontaneous light-changes of from 10 to 15% are rather frequent, and in conventional projection entirely inconspicuous except when they occur during changeovers.

Many of these remarks apply to alterations in the color of the projected light.

If two screens are set up side by side and blank light projected upon them by two projectors, a brightness-difference of 5% is about the smallest that can be detected by human vision under these conditions. Observers have noticed conspicuous brightness-and color-differences in the three conjoined fields of Cinerama projection, hence it may be assumed that the brightness-differences greatly exceed 5% on occasion.

[THE END]

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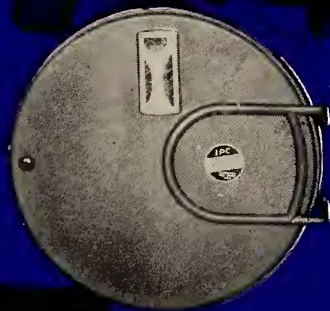
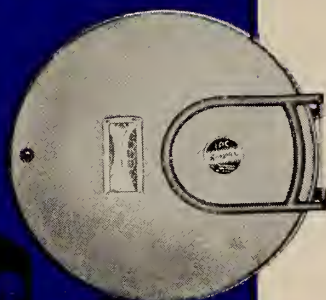
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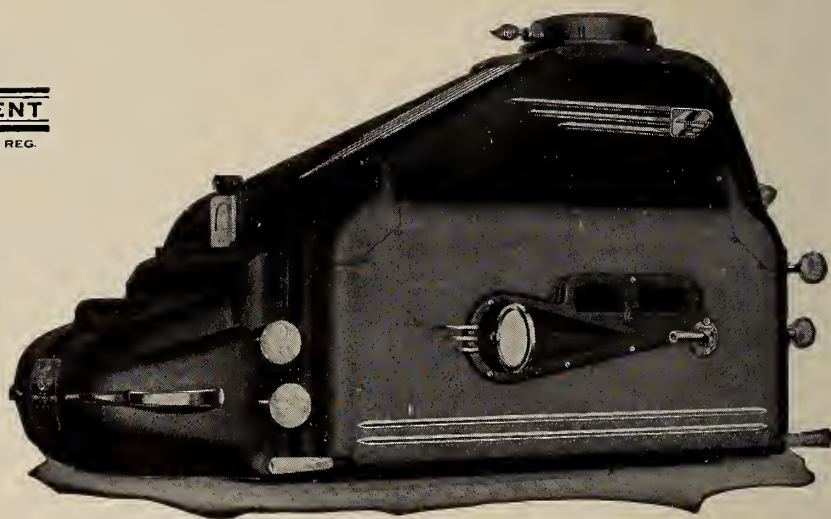
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MONTHLY CHAT

THE SHOUTING is over — for the moment — and the captains and the kings of the motion picture industry have departed from Washington after a valiant battle on behalf of the Mason Bill. IP stands back of this legislation. We feel that the working projectionist has as much at stake in the lifting of the nefarious 20 per cent tax on movie admissions as anybody else. With President Eisenhower's "pocket veto" of the bill early this month we have lost a battle — but we haven't lost the campaign!

To use language that General Eisenhower would understand quite well, we had the men, the materiel, the will to fight, plus a good cause for which to do battle. But we had, on the exhibitor level at least, some gosh awful public relations.

In the opinion of IP (And any good PRO, from the most expensive Madison Avenue practitioner of the art to the lowest two-bit Broadway press agent, would agree), a public relations blunder was a major influence while the President was weighing his decision.

Congress passed the Mason Bill by one of the thumpingest majorities since Inauguration Day. The case presented by the Council of Motion Picture Organizations at Washington hearings was good, well documented and obviously persuasive. So what happened?

Congress passed the bill and, while it lay on the President's desk, exhibitors rushed into their local newspapers and into the trade press with joyous shouts, yipping for all the world to hear — including the delicately attuned ears in the White House — that "We're going to grab that 20 per cent for ourselves!"

If only one exhibitor, one lone theatre owner, any place, announced plans to cut admission prices to the public and so help lure people away from their Tv sets, IP somehow missed hearing about him.

While we agree that a portion of the tax savings should be retained by the exhibitor, and so passed on to the distributor and the producer, we feel strongly that a portion should be passed along to the guy at the ticket window. The White House might have been hard put to explain away a veto had the public weal been involved. But the minute the exhibitors announced their intention to gobble every nickel of the savings, the Mason Bill became legislation on behalf of a "special interest." Americans, by tradition, don't like "special interests" — and so the Mason Bill is history. At least until Congress reconvenes in January.

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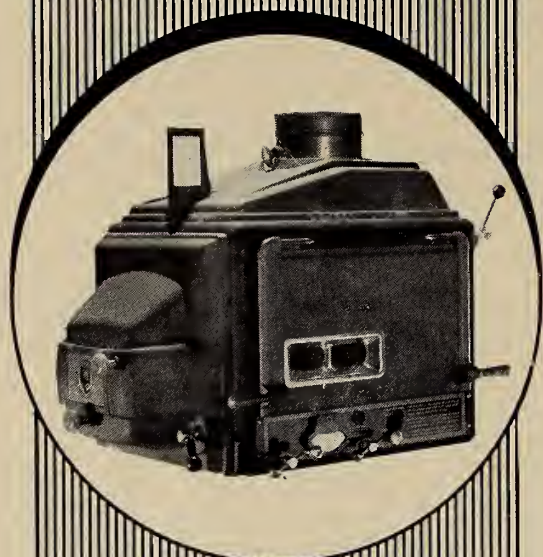
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Is 3-D as revolutionary as sound? In this article, the first in a new series, Mr. Mitchell evaluates the 3-D process in general under the title of

Stereovision and "Convergence" Technique

Stereoscopic Projection and Photography

By ROBERT A. MITCHELL

SPACE as we know it is characterized by a property of "extension" which, for geometrical convenience, is analyzed into three 'dimensions' — height, breadth, and depth.

Paintings, ordinary photographs, and conventional movies are pictorial representations produced on 2-dimensional surfaces. Surfaces, such as motion-picture screens, have height and breadth, but no depth, and yet depth in ordinary "2-D" pictures is automatically indicated by such geometrical phenomena as foreshortening and perspective, and is often startlingly enhanced by differences in the focal clarity of near and distant objects, natural conditions of light and shade, atmospheric veiling of distant backgrounds, and so forth.

In conventional motion pictures other factors may be introduced to increase the illusion of depth. To emphasize the length of a long corridor, for example, the cinematographer chooses a short-focus lens and places his camera at a low elevation. This trick gives excellent distance, and

"dolly shots", in which the camera is slowly moved about while operating, provide a very close approach to true stereoscopy (solid vision). This stratagem foils the physical flatness of the screen to give depth.

Depth in Standard Films

Because conventional movies, even though non-stereoscopic, provide very good illusions of depth without the psychovisual confusion arising from misinterpretations of the distances of objects, it may truthfully be said that the projectionist has been "projecting the third dimension" ever since the inception of motion pictures.

True 3-D stereoscopy is certainly not essential either to the pictorial excellence or to the dramatic power of the movies. In fact, 3-D seems to detract from both of these qualities and diminishes the appeal of moviegoing as a means of relaxation and emotional refueling demanding a minimum of mental and visual effort. 3-D imposes visual fatigue and physical discomfort, and it is beginning, even at this early stage of the game, to show definite signs of irritating patrons for whom its novelty-value has ceased to exist. What cinemastereoscopy *does* contrib-

ute to the theatre is stereopsis, the direct depth-perception effect of binocular vision.

Stereoscopy impresses many people as a very minor addition to the illusion of reality created by theatre movies. It is certainly not an unmixed blessing; and the proponents of 3-D have yet to convince this writer that the commercial inception of a rather cumbersome and makeshift 3-D process in 1953 is a technical development comparable in magnitude to the commercial inception of sound in 1928.

Sound, when it came, widened the scope of the screen immensely without seriously impairing the fluidity of action and dramatic freedom of the movies. What, if anything, can stereoscopy contribute to the story-telling power of the screen?

We have a good right to ask this question because, if a 3-D film be a good one, the patron ignores the stereoscopy the moment he is carried away by the drama. Likewise, a patron watching a good "2-D" film ignores the absence of stereoscopy as soon as he becomes absorbed in the story. It is amusingly ironic, perhaps, that the better 3-D productions have been

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praised by critics because in them stereoscopy has been subdued and reduced almost to the vanishing point. Can this presage a return to "2-D" via the Polaroid route?

Film critics, however, no longer view 3-D as a novelty. The average person who attends a 3-D showing merely to get a look at the third dimension prefers depth and plenty of it. Just once, that is!

As a novelty that packs uninitiated moviegoers into the theatres even in spite of increased admission prices and terrific ocular punishment, motion-picture stereoscopy is a power to reckon with. But when the novelty has worn off, stereoscopy for its own sake assumes its real size as an admittedly puny factor in the overall picture. The patron then grumbles at his dim Polaroid glasses, at the eyestrain induced by incredibly bad 3-D photographic techniques, at the annoying reel-change intermissions, and at every other nuisance which 3-D creates for him.

These observations are not intended as a blanket condemnation of cinema-stereoscopy. We may indeed be thankful that 3-D came along when it did to inject the life-blood of variety into the offerings of the film theatre. As a consequence, public interest in *all* theatre movies is stirring from its slumber, and attendance at conventional "2-D" showings has risen. Most significant of all, the demand for emotional, strongly plotted, fast-moving conventional pictures increases as the public tires of 3-D.

Calm Outlook Needed

We are forced to conclude from the popular reaction to 3-D, first as a

novelty and then as an unwieldy mode of translating a story to the screen, that the present-day "revolution" in the film industry is largely wishful thinking. This is to be expected of an industry maddened by desperation and largely unwilling to return to the simpler and more effective techniques of its creative youth.

It is, of course, true that the first 3-D feature films have labored under the serious disadvantages of "convergence" photography and a host of other technological boners; but it cannot be denied that the mechanical realism of stereoscopy threatens to stifle the versatility and subtlety of the screen. We sit at attention during 3-D showings (how could we possibly relax?) but we are not emotionally affected by stereoscopy as we have been moved countless times in the past by pictorial delineation and by speech and music. This is a danger sign that neither producer nor exhibitor can afford to ignore.

Good for Boxoffice

Regardless of the present turmoil in the exhibition field, cinemastereoscopy should neither disgust nor dismay the projectionist, nor should it engulf him in a passing wave of baseless enthusiasm. Let him consider 3-D as a stimulant that the theatre badly needs in these uncertain times, as a novelty-process that demands careful attention to details to make it reasonably acceptable both to his audiences and to his own standards of perfection. Let him also keep in mind the fact that present 3-D production technique goes on and on creating defects that no projectionist on earth can correct.

In order to understand the nature and effects of some of the irremediable technical boners consistently committed by many producers of 3-D films, it is necessary to have a good understanding of the basic principles of stereoscopic vision and photography.

Stereo Theory Simple

The elementary theory of stereophotography is simple enough. In normal viewing we look at things with two eyes. Because the eyes are $2\frac{5}{8}$ inches apart, the view seen by one of our two eyes is slightly different from the view seen by the other. Combination of the visual stimuli induced by these two slightly different retinal impressions in the brain results in that direct perception of depth called stereopsis.

Euclid, the famous Greek-Egyptian geometrician, understood the theory of stereoscopic vision, as did many other brilliant minds of the ancient world. Sir Charles Wheatstone studied stereoscopic effects intensively in 1833. The old-fashioned stereoscope of our grandparents was invented by Sir David Brewster in 1849 and was manufactured in quantity the following year by A. Ross of London and J. Dubosq of Paris.

Brewster's stereoscope is noteworthy in that it utilizes eccentric portions of a biconvex lens as the two viewing lenses, thus permitting the left and right photographs to be placed somewhat farther apart than the distance separating our two eyes. This enabled fairly large photographs to be used on the stereogram cards; and although Brewster's instrument introduces binocular aberrations which do not exist in modern "View Master"

MASKING OF PROJECTION APERTURE CONVERTS FILMS FOR WIDE-SCREEN SHOWING



ABOVE ILLUSTRATIONS show steps in transition of a standard film frame to wide-screen. Picture at left appears in the conventional 1.33 to 1 ratio. Center picture shows how masks are employed in the projector to "crop" image top and bottom. With a wide-angle lens on pro-

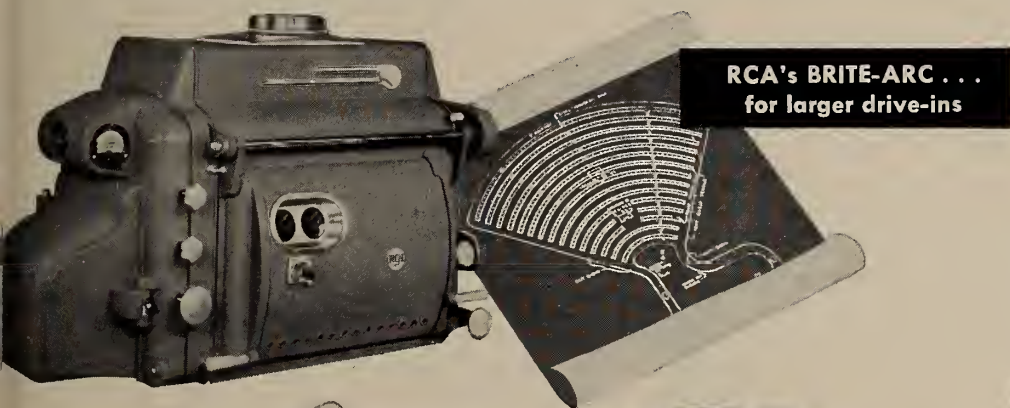
jector, image is then thrown on wide screen in the new rectangular format shown at right. Picture height remains same as in normal projection; only the width is increased. Except for very full closeups, few scenes are affected by the "cropping" or masking.

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How Images Differ

How does the left-eye visual impression (or photograph) differ from the right-eye impression? An experiment will illustrate.

Hold a pencil at arm's length and look past it to a distant wall, or else out the window. Close the left eye and note the apparent position of the pencil against the background as seen by the right eye alone.

Now open the left eye and close the right eye without moving the pencil. Viewed by the left eye alone, the pencil is *apparently* displaced to the right of its previous apparent position — even though it hasn't really moved at all. This illusion is called "parallax," and it can be measured like any other small angle.

This simple experiment enables us to distinguish by inspection the right-eye and left-eye images of a photographic "stereopair."

RULE:—*In the left-eye photograph foreground objects are displaced to the right (relative to background objects). Conversely, in the right-eye photograph foreground objects are displaced to the left.*

Checking 3-D Films

With this rule in mind, the projectionist can tell which is the left and which is the right "section" of 3-D release prints even when the identification leaders are missing. *Corresponding* frames of both sections should be compared with each other. A strong magnifying glass is essential because the pictorial details are so tiny and the displacements due to parallax are so small.

To photograph a movie scene stereoscopically it is only necessary to set up two cameras side by side and run them in synchronism. One camera photographs the left-eye view, and the other the right-eye view.

The lenses of the two cameras, which must be identical in focal length are separated by a few inches to obtain the desired stereoscopic effect. Since human eyes have, on the average, an interpupillary distance of $2\frac{5}{8}$ inches, the two camera lenses must have a center-to-center distance of at least $2\frac{5}{8}$ inches, and preferably more in most cases.

Professional motion-picture cameras,

however, are so bulky that the distance separating their lenses would turn out to be much too great if two of them were placed side by side as close together as they could come. So in practice two cameras are pointed directly at each other, and diagonal mirrors or reflecting prisms are used for reflecting the scene into the lenses.

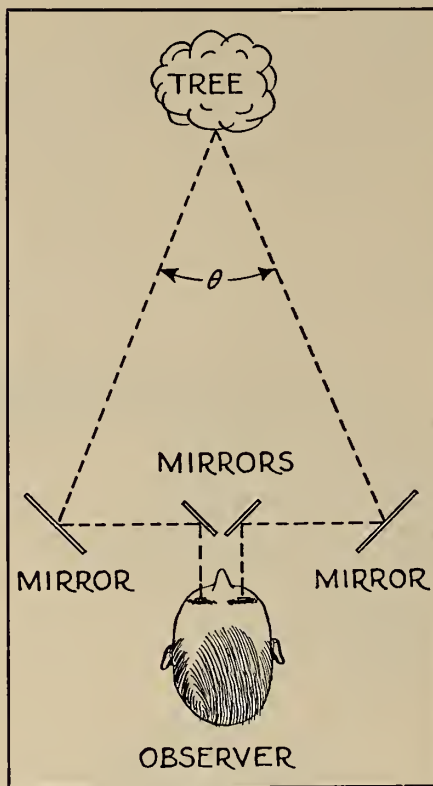


FIGURE 1

The distance from center to center of the two mirrors then becomes the interocular distance which determines the degree of stereopsis.

Double-duty 3-D movie cameras may, of course, be used in place of the set-up involving two ordinary cameras. Such special cameras run two films simultaneously and have two lenses. So far, however, the 2-camera system has been most widely used.

The interocular distance of our two eyes remains fixed—we have no means for spreading our eyes farther apart or for bringing them closer together. And the focal length of our pupils changes very little. Cinematographers, however, have at their disposal a large assortment of camera lenses of widely different focal lengths and they sometimes change their lenses in order to get a desired pictorial composition, distance-effect, or depth of focus. For

this reason the entire field of view of the camera may be much smaller than prevails in normal vision. In a case like this, the effect of a given interocular distance may prove very unsatisfactory. In the better 3-D camera-equipments, therefore, the interocular distance can be varied from 3 to 6 or even 12 inches.

Lenses Effect Depth

Lenses of long focus may result in a "close-up" picture even though the camera is positioned quite far away from the action photographed. The extreme case occurs when telephoto lenses are used. Interocular distance (the distance between the centers of the diagonal mirrors) must be increased as the focal length of the lenses is increased *if the same binocular parallax and degree of stereoscopic depth-effect is to be maintained.*

Needless to say, a uniform degree of stereopsis is desirable in all of the many scenes of a picture. Cinematographers can assure themselves of uniform stereopsis by never changing their lenses, of course; but it would be a distinct disservice to the art of cinematography to tie the camera-man's hands in this respect.

It is therefore utterly unsound to specify a single interocular distance for all cases. Yet this is just what some of the "experts" have done!

If the interocular distance be too small, the stereoscopic effect will be disappointingly slight and if it be too great, depth will be exaggerated. The unfortunate result of too great an exaggeration of depth is twofold: the eyes of the movie patron cannot converge satisfactorily upon very close objects in the picture, and all objects appear like miniatures. It is good 3-D practice to exaggerate depth, but only very slightly.

Simple Experiment

The reader can easily perform an experiment to verify what has been said concerning the effects of excessively exaggerated depth. Take a narrow board about 3 feet long and attach to it mirrors positioned diagonally as shown in Fig. 1. The two inside mirrors should have a center-to-center distance of about $2\frac{5}{8}$ inches. The distance of the outside mirrors from the inside ones may be varied for different depth effects. It will be observed that as the distance of the

(Continued on page 22)

Confusion Says-

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Columbia 3-D?
Vitascope?
Tru-Stereo?

RKO Radio 3-D?
Stereo-Cine?
CinemaScope?
20TH-Fox 3-D?

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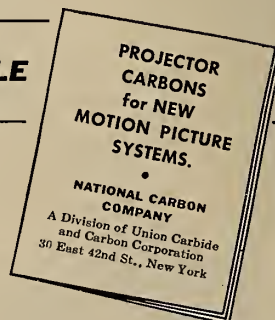
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Converting Theatres for CinemaScope

In response to many requests for information on the equipment used in converting theatres for the CinemaScope system of projection, IP presents the following abstracts from a manual on the subject just issued by 20th Century-Fox.

CINEMASCOPE projection is a method of presenting motion pictures through an anamorphic lens that expands the picture horizontally on a wide, concave screen. The CinemaScope picture is compressed when filmed through an anamorphic camera lens and then expanded by a similar lens in projection.

In addition, the system incorporates a stereophonic sound system that uses a film-driven soundhead designed to pick up the multiple magnetic sound tracks that are also included on the film. Also required is a multiple installation of amplifiers, speaker assemblies and allied equipment needed for stereophonic sound.

Following is detailed information concerning this equipment and instructions for theatre surveys for its installation:

The Anamorphic Lens

The anamorphic lenses supplied with the CinemaScope equipment package have been designed as frontal attachments to the regular projection

lenses, and represent an approximate $6\frac{1}{2}$ inches of extension beyond such projection lenses in installations using projection lenses of a diameter of $2\frac{25}{32}$ inches, and an approximate $9\frac{1}{2}$ inches in installations using projection lenses of a diameter of 4 inches.

At the present time, projection lenses of focal lengths of 5 inches or less are furnished in barrel diameters of $2\frac{25}{32}$ inches, and projection lenses in focal lengths of 5.25 inches and over are furnished in barrel diameters of 4 inches, though in older types these longer focal-length lenses appear in the smaller diameter barrels. It is recommended, however, that this latter type be replaced by newer, high-speed lenses.

The Aperture

The aperture dimension for the CinemaScope picture is .715 by .912, resulting in an increase in height of the present picture by about one-sixth if the present projection lenses are retained. In practice this dimension is entirely exact only in case of head-on projection.



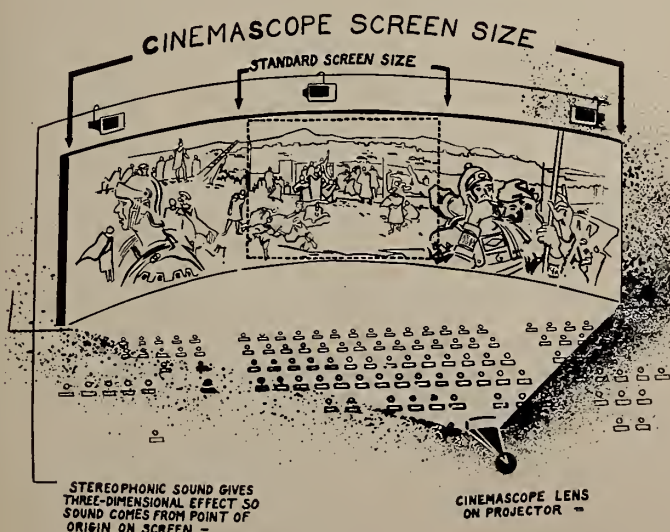
"Squeezed" by CinemaScope's anamorphic lens, Richard Burton and Jean Simmons are shown in a scene from "The Robe."

In angular projection, that is at greater angles of projection than zero degrees, the aperture plate, being delivered with a lesser opening than its nominal dimension, may be filed to the opening required by the individual situation as a correction for keystone. This is, at present, an on-the-job operation.

Accompanying this article is a chart of the CinemaScope picture sizes resulting from the use of various focal-length lenses at various throws at intervals of 10 feet. Since heights increase somewhat with the angle of throw, some account must be taken of this difference. It should also be remembered that the picture widths given are figured upon the chord of the screen and not upon its arc. That is to say the width of a CinemaScope picture is measured by a straight line connecting both edges of the picture and not by a line following the arc.

The Projection Ports

Since the beam from the anamorphic lens diverges immediately after it leaves the lens, and the width of the beam is, generally speaking, more than double the width of the present beam, the present beam should be measured at the port, and at any enframing of the port, to determine the width re-



Dotted lines in the sketch show the size of the conventional screen contrasted with the CinemaScope "Miracle" screen.

quired for the CinemaScope beam. Where necessary, ports must be enlarged and enframent of the ports cut away.

The CinemaScope Screen

The Miracle Mirror screen delivered with the CinemaScope package will be fabricated and delivered in the over-

all sizes required, webbed and grommeted, the latter on 6-inch centers with an additional grommet at each end of all seams.

There are two types of surface design available, one for projection angles approximately 10 to 12 degrees and greater and known as Type M-5 or tilted pattern, and one for projection

angles less than approximately 10 to 12 degrees, and known as Type M-2 or head-on pattern. The angles of projection and the proportions of a particular theatre, including the angle of the balcony, if any, determine which type of screen is best for a particular house.

The screen must be mounted in a

CinemaScope Projection Table – Aperture 0.912" x 0.715"

Focal Length Inches	PROJECTION DISTANCE – FEET																	
	40'	50'	60'	70'	80'	90'	100'	110'	120'	130'	140'	150'	160'	170'	180'	190'	200'	
2.00	36.5 14.3	45.6 17.9	54.7 21.5	63.8 25.0	72.9 28.6	82.0 32.2	91.2 35.8											
2.25	32.4 12.7	40.5 15.9	48.6 19.1	56.7 22.2	64.8 25.4	72.9 28.6	81.0 31.8											
2.50	29.3 11.4	36.5 14.3	43.7 17.2	51.0 20.0	58.3 22.9	65.6 25.7	72.9 28.6	80.2 31.5										
2.75	26.5 10.4	33.1 13.0	39.8 15.6	46.4 18.2	53.0 20.8	59.6 23.4	66.3 26.0	72.9 28.6	79.6 31.2									
3.00	24.3 9.5	30.4 11.9	36.5 14.3	42.5 16.7	48.6 19.1	54.7 21.5	60.1 23.8	66.9 26.2	72.9 28.6	79.0 31.0								
3.25	22.4 8.8	28.1 11.0	33.7 13.2	39.3 15.4	44.9 17.6	50.5 19.8	56.1 22.0	61.7 24.2	67.3 26.4	72.9 28.6	78.5 30.8							
3.50	20.8 8.2	26.0 10.2	31.3 12.3	36.5 14.3	41.7 16.4	46.9 18.4	52.1 20.4	57.3 22.5	62.5 24.5	67.7 26.6	72.9 28.6	78.1 30.6						
3.75	19.4 7.6	24.3 9.5	29.2 11.4	34.0 13.4	38.9 15.3	43.7 17.2	48.6 19.1	53.5 21.0	58.4 22.9	63.2 24.8	68.1 26.7	72.9 28.6	77.8 30.5					
4.00		22.8 8.9	27.3 10.7	31.9 12.5	36.5 14.3	41.0 16.1	45.6 17.9	50.1 19.7	54.7 21.5	59.3 23.2	63.8 25.0	68.4 26.8	72.9 28.6	77.5 30.4				
4.25		21.4 8.4	25.7 10.1	30.0 11.8	34.3 13.5	38.6 15.2	42.9 16.8	47.2 18.5	51.5 20.2	55.8 21.9	60.0 23.6	64.4 25.2	68.6 26.9	72.9 28.6	77.2 30.3			
4.50		20.3 7.9	24.3 9.5	28.4 11.1	32.4 12.7	36.5 14.3	40.5 15.9	44.5 17.5	48.6 19.1	52.6 20.7	56.7 22.2	60.7 23.8	64.8 25.4	68.8 27.0	72.9 28.6	77.0 30.2		
4.75		19.2 7.5	23.0 9.0	26.9 10.5	30.7 12.0	34.5 13.6	38.4 15.1	42.2 16.6	46.1 18.1	49.9 19.6	53.7 21.1	57.6 22.6	61.4 24.1	65.3 25.6	69.1 27.1	72.9 28.6	76.8 30.1	
5.00			21.9 8.6	25.5 10.0	29.2 11.4	32.8 12.9	36.5 14.3	40.1 15.7	43.8 17.2	47.4 18.6	51.0 20.0	54.7 21.5	58.3 22.9	62.0 24.3	65.6 25.7	69.2 27.2	72.9 28.6	
5.25			20.8 8.2	24.3 9.5	27.8 10.9	31.2 12.3	34.7 13.6	38.2 15.0	41.7 16.3	45.2 17.7	48.6 19.1	52.1 20.4	55.6 21.8	59.0 23.2	62.5 24.5	66.0 25.9	69.4 27.2	
5.50			19.9 7.8	23.2 9.1	26.5 10.4	29.8 11.7	33.1 13.0	36.5 14.3	39.8 15.6	43.1 16.9	46.4 18.2	49.7 19.5	53.0 20.8	56.3 22.1	59.6 23.4	63.0 24.7	66.3 26.0	
5.75				22.2 8.7	25.4 10.0	28.5 11.2	31.7 12.4	34.9 13.7	38.0 14.9	41.2 16.2	44.4 17.4	47.6 18.7	50.7 19.9	53.9 21.1	57.1 22.4	60.2 23.6	63.4 24.9	
6.00				21.3 8.3	24.3 9.5	27.3 10.7	30.4 11.9	33.4 13.1	36.5 14.3	39.5 15.5	42.6 16.7	45.6 17.9	48.6 19.1	51.7 20.3	54.7 21.5	57.7 22.6	60.8 23.8	
6.25				20.4 8.0	23.4 9.2	26.1 10.3	29.2 11.4	32.1 12.6	35.0 13.7	37.9 14.9	40.9 16.0	43.8 17.2	46.7 18.3	49.6 19.5	52.5 20.6	55.4 21.7	58.4 22.9	
6.50					22.4 8.8	25.2 9.9	28.1 11.0	30.9 12.1	33.7 13.2	36.5 14.3	39.3 15.4	42.1 16.5	44.9 17.6	47.7 18.7	50.5 19.8	53.3 20.9	56.1 22.0	
6.75					21.6 8.5	24.3 9.5	27.0 10.6	29.7 11.7	32.4 12.7	35.1 13.8	37.8 14.8	40.5 15.9	43.2 17.0	45.9 18.0	48.6 19.1	51.3 20.1	54.0 21.2	
7.00					20.8 8.2	23.4 9.2	26.0 10.2	28.7 11.2	31.3 12.3	33.9 13.3	36.5 14.3	39.1 15.3	41.7 16.4	44.3 17.4	46.9 18.4	49.5 19.4	52.1 20.4	
7.50							24.3 9.5	26.8 10.5	29.2 11.4	31.6 12.4	34.0 13.4	36.5 14.3	38.9 15.3	41.3 16.2	43.7 17.2	46.2 18.1	48.6 19.1	
8.00							22.8 8.9	25.1 9.8	27.3 10.7	29.6 11.6	31.9 12.5	34.2 13.4	36.5 14.3	38.7 15.2	41.0 16.1	43.3 17.0	45.6 17.9	
8.50								23.6 9.3	25.7 10.1	27.9 10.9	30.0 11.8	32.2 12.6	34.3 13.5	36.5 14.3	38.6 15.2	40.7 16.0	42.9 16.8	
9.00									24.3 9.5	26.3 10.3	28.4 11.1	30.4 11.9	32.4 12.7	34.4 13.5	36.5 14.3	38.5 15.1	40.5 15.9	
	40'	50'	60'	70'	80'	90'	100'	110'	120'	130'	140'	150'	160'	170'	180'	190'	200'	

Above is a chart of CinemaScope picture sizes resulting from the use of standard focal length lenses of various throws at intervals of ten feet. Sizes given are to the nearest tenth of a foot. In theatres

retaining their present projection lenses, the CinemaScope aperture dimension, differing from the standard aperture of 0.825 x 0.600 inches, will result in a picture height increase of about one sixth.



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TODAY sound keeps pace with action... fills first one area, then another, then all of the screen with rich 3-dimensional reality.

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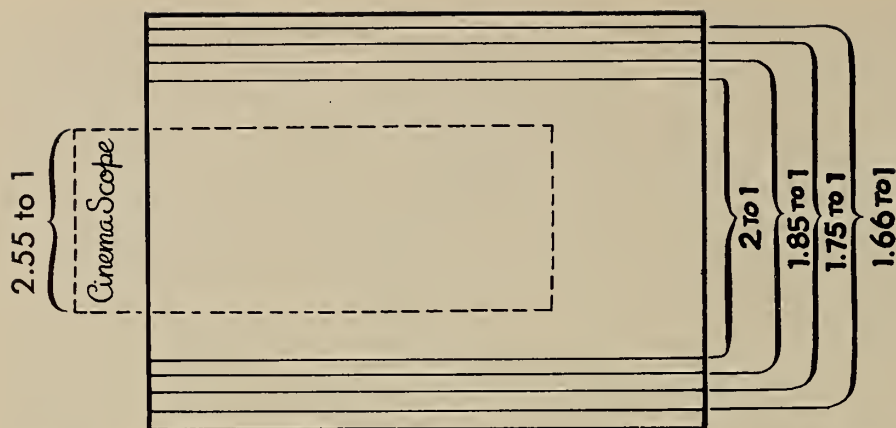
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CinemaScope's screen proportions are shown above by dotted lines in contrast to the aspect ratios proposed by other Hollywood studios for wide-screen projection with altered aperture plates and shorter focal-length lenses. The CinemaScope picture is much wider in relation to height, providing a sweeping, panoramic image.

suitable frame and in a smooth concave curve, the arc of which is the picture throw or as close thereto as possible. In many instances, a cord or tape affixed to the projection booth wall at a point between the two projection ports, may be used as a radius to describe the arc upon the floor of the stage.

In addition to the shaping of the aperture, where an angle of projection is 14 to 15 degrees or more, some tilt should be given the entire concave screen and frame to overcome key-stone, but in practically every case this should not exceed 5 to 6 degrees.

Some means of varying the tilt of the screen is desirable, but attention is called to the fact that, as a concave screen is tilted, its outer extremities rise. This situation should be recognized in the design and construction of the frame.

Since the picture width is computed upon the chord of the screen, the arc of the chord should be computed in order to obtain the width of screen necessary, and the height should be determined from the exhibitors' calculations in respect to the size of the CinemaScope picture he desires, the size of the conventional picture he desires, and the size he might require for other methods of projection.

Masking the Screen

The screen and frame should be masked top and bottom to the established height of the picture, placing the bottom of the CinemaScope picture as close to the floor of the stage as possible, or as low as the sight lines permit.

Since, as has been mentioned before the outer ends of the picture projected

upon a curved or concave screen rise from the floor when the picture is tilted, a bottom masking with a curved top is indicated for such tilted installations. However, since the public has been accustomed to the straight lines of present markings and since the curved masking presents several additional problems, the bottom masking may be installed level in most instances provided it does not mask essential portions of the center of the picture upon which it must inchoach.

The side maskings should be adjustable in width, possibly with a stiffened leading edge, to close in to mask the sheet for conventional pictures, and to open up to mask the screen for CinemaScope. This may be done by supporting the side masking on tracks with suitable stops on the tracks and at the floor, or by other means.

Stereophonic Sound

The stereophonic sound system, basically an integral part of the CinemaScope system, consists of an element to be attached to the projection head at its intersection with the upper magazine, designed to pick up the magnetic tracks of the picture film, together with the necessary pre-amplifiers, matched amplifier and speaker assemblies with monitor and other associated equipment.

The operation of this element will be controlled by switching arrangements as will the photographic pick-up in the present soundhead, permitting them to operate independently of one another as desired.

Since, in addition to the three primary magnetic sound tracks required for stereophonic sound, CinemaScope films will be supplied with a fourth

effects and control track, some theatres may wish to extend the range of participation of effect into the auditorium where an additional pre-amplifier and amplifier will be required, together with a number of house speakers as may be indicated by survey.

Transistor's 5th Birthday

The transistor, that tiny but revolutionary electronic device capable of taking over many of the functions of the vacuum tube and performing a number of other tasks, has been much improved since its announcement 5 years ago by Bell Telephone Laboratories. Already put to varied uses in the complex communications networks, the transistor has also aroused widespread interest throughout the radio and television industry, and several hearing aids employ transistors instead of vacuum tubes.

For all its insignificant appearance, the transistor does amazing things. It will serve as an amplifier or an oscillator, but one must look hard to find any other resemblance to the familiar vacuum tube now used to do these basic jobs.

Transistor's Extreme Simplicity

The transistor is rugged, has no vacuum, no grid, no plate, no cathode and, therefore, there is no warmup delay — it operates instantly. The first type to be announced, known as the point-contact transistor, consists of two thin wires resting on a tiny wafer of germanium and spaced only a few thousandths of an inch apart. The flow of current in one of the fine points controls the flow in the other point. Since transistors need no heater to supply electrons, they require very little power — less than a thousandth of that used by an ordinary flashlight.

Compared with the relatively slow development of vacuum tubes and other electronic devices, transistor development has been extremely swift. Bell Labs. now has nearly 40 experimental types, some of which foretell applications of the highest order of usefulness.

Shupert to ABC-Paramount

George T. Shupert has joined ABC-Paramount and will be in charge of film distribution for television. Mr. Shupert resigned as vice-president and general manager of United Artists Television Corporation to assume his new post.

New Canadian Theatres

A total of 40 new theatres have gone into operation in Canada so far this year. These include 17 new drive-ins and 23 standard houses. Theatres under construction total 38, including 22 drive-ins and 16 indoor houses. In the planning stage are about 20 drive-ins and 16 standard theatres.

What Price Chaos in Sound?

By THOMAS L. BURNSIDE

IS THE present uncertainty in the field of stereophonic sound acting as an effective brake on the motion picture industry's fitful movement towards prosperity via the technological route? A sampling of opinion by *International Projectionist* reveals a consensus that is definitely in the affirmative.

In the interim between the July issue of IP and the day this is written, the editorial department has had this problem raised in a dozen different ways — and from a dozen different questioners, including top manufacturers of sound equipment as well as exhibitors and working projectionists.

One informal group of engineers and projection experts met early this month on the problem and went so far as to circularize the major Hollywood studios seeking information. Specifically, they asked for company plans regarding types of sound tracks, the number of pictures planned, in the works and now completed using 3-track recording.

One top executive of a major manufacturing company in the stereophonic sound system field summed up the general thinking this way:

"Today," he said, "approximately 600 of the largest and best theatres in the United States and Canada are equipped with a stereophonic sound system and each week 15 or more theatres are added to the list.

Systems Are Alike

"No matter what the make or model of these stereophonic systems they are all alike in that they have three identical power amplifiers, three identical pre-amplifiers, three identical loud speaker systems, a number of auditorium speakers and one or two magnetic reproducers.

"These reproducers are designed to reproduce three 200-mil magnetically recorded sound tracks on a separate sound film. These reproducers are synchronized with the picture film by electrical interlock equipment.

"It has been proposed by one of the film producers, 20th Century-Fox, that theatre owners purchase stereophonic sound equipment that will reproduce

three 50-mil and one 25-mil magnetic sound tracks recorded on the picture film itself.

"Obviously," the executive went on, "such a stereophonic system would require a different type of magnetic reproducer than the ones with which more than 600 theatres are now equipped.

"If theatres are to present Fox pictures they will need one kind of magnetic sound reproducer, and if they wish to play pictures of all other studios they will need the type presently installed in 600 theatres.

71 Pictures Ready

"While Fox will undoubtedly bring out some fine pictures recorded with stereophonic sound on the picture film, it would appear to be to the best interests of the exhibitors of the country to continue to install stereophonic sound systems with separate magnetic sound reproducers. There is a known early future supply of 71 pictures forthcoming from other studios which require stereophonic sound systems with separate magnetic reproducers.

"Insistence by Fox that their method is the only good one has caused a number of theatres to delay on the installation of stereophonic sound when they actually should be rushing to purchase a stereophonic sound system.

The Worm Turns—TV Fears Theatre Competition

For a long time theatre men have been complaining about competition from home television sets, but this month the situation was reversed. A television executive pulled out his crying towel and expressed the fear that film theatres were in a position to do serious damage to the TV networks.

Theatre Tv, for which 110 theatres are now equipped, is potentially capable of blacking out all major sports events for sponsored television, it was asserted by Ted Leitzell, of the Zenith Radio Corp. at a New York press luncheon. He pointed out that the returns from theatre Tv easily could, as it is extended to more and more theatres, return a far greater revenue than is possible via

"Presentation of just a few of these great forthcoming pictures should produce profits that will not only pay for any small portion of current stereophonic sound systems that may become obsolete but they should go a long way towards paying for the entire system.

Quality of Sound

"Stereophonic sound, plus wide screen and 3-D, could well be the salvation of our nation's exhibitors and if there should be a long halt in installations of stereophonic sound it might never become the big box-office producer that is its potential.

"Projectionists who know about sound reproduction will be quicker than exhibitors in recognizing that the quality of sound reproduction from three 200-mil tracks will be vastly superior to sound reproduction from three 50-mil tracks. From the standpoint of quality of reproduction, a stereophonic sound system with a separate magnetic reproducer is a better piece of equipment than systems with the penthouse or button-on type.

"Projectionists will also realize that, whether the separate reproducer or the penthouse type become standard equipment, the theatre still needs *both* types of stereophonic systems if pictures from all Hollywood studios are to be played."

[EDITOR'S NOTE: This issue of IP went to press before the 20th Century-Fox stereophonic system was unveiled to the press in New York. A full report on the Fox system will be presented in IP next month.]

sponsored video. "Even the largest advertiser could not compete," he said.

At the same luncheon Dr. Millard C. Faught, economic consultant to Zenith and a long-time proponent of "Phonevision," a system of collecting fees from home viewers for high-quality television shows, stated that he believed the FCC will "cooperate with the inevitable" and authorize some system of boxoffice television for home listeners within a year.

Advertising revenue is not sufficient to bear the whole burden of high-quality television programs, and the markets of some television stations are so small that they cannot be supported by advertising alone, he said.

Outline of 16-mm Projection

Presenting some comments on the history and operation of 16-mm projectors, abstracted from a very complete text-book on the subject.*

V

WHEN a room is used frequently for projection, it will pay to obtain expert advice on the best manner to treat it acoustically. Manufacturers of sound insulation materials such as Johns-Manville maintain staffs for the purpose of advising prospective users on how to get the best results per dollar invested.

Two Simple Rules Cited

There are two simple rules that will aid sound reproduction materially:

(1) There should be no obstruction between the mouth of the loudspeaker and the ears of each listener in the audience. This is best accomplished by elevating the loudspeaker above the heads of the audience; in this position there will be least obstruction by the heads of persons in the forward portion of the audience.

A location that is suitable is at the top center of the screen with the loudspeaker mouth pointing at the center of the audience. In 35-mm entertainment theatres, a perforated screen is used with the loudspeaker behind it at approximately 2/3 screen height. Although this is a good arrangement, perforated screens are rarely used for 16-mm projection because of the light loss of a perforated screen. Another good loudspeaker location is on a stand at the side of the screen with the center of the horn mouth located at about 2/3 screen height and "pointed" at the center of the audience. In placing the loudspeaker, it should be remembered that when a loudspeaker is not along a line of sight the listener cannot hear it properly.

(2) In the acoustical arrangement of a room, parallel hard surfaces should be avoided by coating one surface of each pair with some kind of absorbent material.

In a room with an audience, it is more important to cover that part of the ceiling under which no one sits rather than the part under which the audience is located. Likewise, in arranging drapes and hangings on the

walls, it is not necessary to cover a wall area directly opposite drapes used over windows. In general, parallel surfaces are best controlled by covering only one of the pair of surfaces. In the case of parallel side walls, for example, one wall might alternate with a standard width of wallboard running from floor to ceiling, and no covering for the same width. The opposite wall would likewise alternate except that a covered portion of the first wall would be directly opposite an uncovered portion of the second wall, and vice versa. The rear wall should be almost completely covered if possible.

Practical Projector Performance

A good 16-mm sound projector should provide a very steady, sharply focused picture that is evenly illuminated, together with clear, steady, unwavering, undistorted, naturally reproduced sound. It is reasonable to expect this performance not only at the beginning of the first reel projected with the machine, but also throughout each and every reel to be projected. Ordinarily, if a machine provides such performance when new, its performance does not deteriorate suddenly. An effect common to all machines is that the picture focus adjustment changes as the machine heats up, making slight focus readjustment necessary during projection if the mechanism is used for several consecutive reels.

A good projector should be expected to produce minimum film damage and wear and tear. Library-circulated prints are expected to provide from 50 showings upward before they are discarded; each user of a machine is morally bound to make certain that his equipment does not mutilate the film; the 50th user has as much right to a satisfactory showing as the first.

Maximum Number of Runs

Some well-known machines are "very hard on film," while the others are "easy on film." If a loop of film is made up that will run continuously in a projector, that loop should run at least 750 times without evidence of scratching or damage; it should show no injury to sprocket holes, to the

picture area, or to the sound track area. Better grade projectors can ordinarily run such a loop 3000 times; and in a series of tests at the Bureau of Standards just before World War II, one proved capable of cycling a loop 5200 times without damage.

In the same Bureau of Standards test, a well-known machine with some of the very best features, failed because it proved destructive to film. The maximum life of a test loop obtained with this machine was 700 times, a minimum of about 50 times and an average life of about 100 times. Such destructiveness is a very serious matter despite a machine's technical excellence otherwise.

[THE END]

16-mm Films Booming in Educational Field

Attendance at movies is booming, at least in the 16-mm field, according to a survey report presented to the National Audio-Visual Association's annual convention just concluded in Chicago.

More than 100,000 16-mm projectors are now in use in schools, the convention was told, with many thousands more in operation as part of the educational programs of trade unions, churches, fraternal organizations and women's clubs.

Industry, the survey showed, is by far the largest user of 16-mm equipment. In addition to purchasing or renting professionally produced films for advertising, sales promotion, public relations and other purposes, including safety campaigns, many business firms maintain audio visual departments to film in-plant movies for training employees and for efficiency studies.

Altec Cuts Stereo Costs

Altec Service Corp. announced that a new schedule of stereophonic sound installation costs, involving appreciable reductions is now in effect for theatres throughout the country. Installation prices now run from \$375 for smaller capacity theatres to a maximum charge of \$750 for larger houses. The reduction exceeds \$200 in some cases.

The company also reports that it is continuing a rapid expansion of its engineering and service staff to cope with the growing schedule of stereosound installations, which is expected to mount to 50 per week by Sept. 1.

Altec is continuing to hold stereosound clinics and forums in conjunction with CinemaScope demonstrations in key cities throughout the country. The 8th and 9th clinics were held in San Francisco and Seattle last month.

* Cond. from "16-mm Sound Motion Pictures," by W. H. Offenhauser, Jr., published by Interscience Publishers, Inc., New York.



Seen at the Chicago opening of Cinerama are, left to right, Walter Thompson, assistant general manager in charge of technical services and producer of Cinerama's prologue; Gene Atkinson, business manager of Projectionists' Local No. 110; Lawell Thomas, Cinerama's president and narrator, and Lester B. Isaac, general manager of theatre operations.

CINERAMA

Moves to the

MEZZANINE

IT'S HARD to believe that the revolution in the film industry began, so far as the box office is concerned, less than one year ago. On September 30, 1952, to be exact!

On that date "This is Cinerama," first of the startling innovations to hit the public in a big way since "The Jazz Singer" exploded on the industry back in 1927, opened in New York and started the movie business on the merriest roller coaster ride in its history.

Now Cinerama, in its newest installation — in Eitel's Palace Theatre, on LaSalle St. in Chicago's Loop — has broken with its own tradition.

The battery of three projection machines has been lifted from the orchestra floor where, as in New York,

Los Angeles and Detroit, the trio of specially built projection rooms occupied valuable seating space. At the Palace, engineers have suspended the booths between the mezzanine and the balcony floors, resulting in improved projection because the suspended position completely eliminates bothersome vertical pitch. The center of the lens more nearly approximates the center of the screen than in other Cinerama theatres. Too, access to the machines is much easier.

With box office business booming (blocks of tickets have been sold for dates well into 1954), Lester B. Isaac, Cinerama's general manager for theatre operations, paid glowing tribute to the members of Local 110, the Chicago projectionists Local of the IA,

and to the business manager, Gene Atkinson.

"We have had fine cooperation from Gene Atkinson and the membership of Local 110," Mr. Isaac said. "They have given us a wonderfully smooth operation. They were eager to learn and to help during the preparatory stages. They are giving our performances the real polish and perfection so essential to the success of Cinerama."



Cinerama's Chicago installation (below) raises projection equipment from the auditorium floor, as in New York, Los Angeles and Detroit, and suspends the three specially built rooms between the balcony and the mezzanine (arrows), thus eliminating vertical pitch. The center of the lenses is more on a line with the center of the big screen. The smaller picture (right) shows the orchestra floor installation.



IN THE SPOTLIGHT

REPRESENTING 15 West Coast Locals, the IA recently submitted formal demands for a new basic agreement to the Association of Motion Picture Producers. Included in the proposals submitted are (1) pay increases from 10 percent to 15 percent; (2) that Locals receive 5 percent of the revenue derived from all re-issues and from theatrical movies shown on Tv, and (3) that producers shall contribute 25c per hour to the Locals' pension funds. It was also proposed that the producers contribute 3 percent of the gross payroll to the Health and Welfare Plan in place of the present contribution of 5 cents per hour.

Negotiations will open on September 8 with IA Representative Roy Brewer representing the Locals, and Charles Boren negotiating for the AMPP.

- Mrs. Gertrude Gompers, widow of Samuel Gompers, founder and for many years president of the AFL, died August 1 in her home in New York City. Mrs. Gompers was 70 years old and had been ailing for the past year.

- Tv technicians of the Canadian Broadcasting Company recently voted in favor of the IATSE as their bargaining representative in a hotly contested jurisdictional dispute with NABET (National Association of Broadcast Engineers and Technicians). (See *IP* for May, 1953, page 16.) Technicians affected by the election are employed in broadcasting studios in Montreal, Toronto, and Ottawa.

- Harold J. Germann, member of Local 352, Springfield, Ohio, was highly commended by Police Chief Lawrence A. Abbott and other civic leaders for a traffic safety film he produced and photographed for the Springfield police department. The film runs about 25 minutes and stresses the importance of obeying traffic regulations. The scenes are so realistically portrayed that during the filming of an accident investigation a passerby

telephoned the police department to report an "accident." A commentary script was written for the movie and it is now available to schools, clubs and other interested groups.

Germann is chief projectionist at the Regent Theatre in Springfield, having worked there for the past 37 years. Taking motion pictures, both 16- and 35-mm, has long been a hobby of Germann's and he is very well known in the short subject field.

- D. R. Barnecko, secretary-business representative for Indianapolis Local 30, was unanimously re-elected secre-

tary-treasurer for District No. 8 (Kentucky, Indiana, Michigan and Ohio) at the District's recent 45th convention held at the Commodore Perry Hotel in Toledo, Ohio. IA Representative John B. Fitzgerald presided at the meeting.

Many problems were discussed by the delegates, with particular emphasis being placed on the various wide-screen and 3-D projection techniques. Drive-in theatres also came in for a good share of the discussions and ways and means of organizing them were taken up. A donation of \$100 to the Will Rogers Memorial Hospital was voted by the delegates.

A resolution was passed honoring the memory of the late IA Assistant President Thomas J. Shea.

- The members of Laboratory Technicians Local 702, New York City, ratified a new two-year agreement with the Eastern laboratories, providing for an *overall* increase of 11¼ per cent. The contract is retroactive to June 17

Next Month in *IP*!

WHAT'S a stroboscope? What is an anamorphic lens? When the Chicago Cubs pull a "squeeze play" everybody from the bat boy to the projectionist in the Bijou knows what they're up to — but when a Hollywood cameraman pulls an optical squeeze play for CinemaScope that's another story. Read all about it in September's *International Projectionist* when . . .

Henry Kogel, staff engineer of the Society of Motion Picture and Television Engineers, defines some of the puzzlers that plague projectionists when they wade through articles in *IP*.

Robert Mitchell, *IP*'s expert on such things, follows up his piece in this month's issue with a penetrating discussion of stereoscopic projection processes. Mr. Mitchell has another article coming up in October, too.

With Color Television in the offing, to give more jitters to an industry already with the shakes from the 3-D's, *IP* is set for September with a study of Color Tv — with the stress on technique and some remarks on its probable effect on the projection business.

Theatre Tv, too, looms important economically, not only to the men who own theatres, but to the men who throw the fights on the screen as well. *IP* will have a story on that, too.

Will 3-D drive people blind — as well as batty? Or is it the answer to the eye-doctor's prayer? September's *IP* has something to say on the effects of the new medium on the health of the millions who, we hope, will flock into the theatres.

Also, Tom Burnside of *IP*'s editorial staff, will follow through with an article on the CinemaScope magnetic sound track on film. This system, in conflict with the type now installed in hundreds of key theatres, has the industry excited. You'll know all about it when you read September's issue.

Because *IP* is the projectionists' magazine, all of these articles — and others, too — will be tailored to your particular needs. If you haven't subscribed as yet, get your subscription in at once — and get your projection room partners to subscribe. You'll want to keep a file.

last and gives the members a wage boost of $7\frac{1}{2}$ per cent for a 40-hour work week. In addition, the laboratories will contribute $7\frac{1}{2}$ cents per hour into the Local's welfare fund, while each employee will contribute 5 cents per hour.

- Deon DeTitta, member of New York Local 306 and chief projectionist for 20th Century-Fox for many years, retired last month after 37 years with the company. His association with the old Fox Film Corp. began back in 1916 when he ran pictures for William Fox in the company offices on West 46 Street, N. Y. C., later moving on to the company's new headquarters on West 56 Street, where he operated one of the six preview projection rooms.

- Several months ago, Boston Local 182 was enjoined from picketing two drive-in theatres as a result of a suit brought against the State commissioner of public safety by a group of independent exhibitors who sought to effect a one-man projection shift in direct defiance of a ruling set up by the Massachusetts Department of Public Safety, to wit:

When more than one cinematograph or similar apparatus involving the use of a combustible film more than ten inches in length is used for the continuous exhibition of motion pictures, there shall be two licensed operators in attendance in the booth or enclosure. When only one licensed operator is in attendance, it will be necessary to "black-out" during the process of changing over. While exhibiting motion pictures the operator shall devote his entire time and attention to that work,

and shall not leave the operating side of the machine while it is in motion.

The decision of the presiding judge that the above regulation was "invalid, void, and unenforceable," was appealed by the State commissioner, and there the matter rests until the appeal is heard. The importance of this case cannot be minimized for its final disposal may have far-reaching repercussions affecting the welfare of the projectionist craft throughout the entire country.

25 Years Ago — August 1928

- Resolution No. 38 adopted. IA Monthly Bulletin to publish names and addresses of District secretaries . . . Wm. F. Green, president of the AFL appealed to IA President Canavan to urge all IA Locals in the state of Minnesota to campaign for the re-election of U. S. Senator Henrik Shipstead, whose "legislative record on measures of interest to labor is 100 per cent." The appeal was published in the IA Bulletin with a recommendation that Minnesota Locals lend their support to the Senator. . . IA President Canavan urged all Local wage-scale committees engaged in negotiating new contracts to continue with such negotiations as long as there is any hope of reaching an amicable settlement, and to try to avert strikes whenever possible. . . Local No. 90, Stockton, Calif., gave a banquet in honor of Grover A. Grider, member of the Local, who was elected mayor of Stockton. . . John Wines, charter member of Local 100, Parkersburg, W. Va., was killed while running an electric drill which came in contact

with a heavily charged electric wire. . . The death of one of America's foremost actors and a friend of organized labor, Robert B. Mantell, was mourned by the members of Local 42, Omaha, Nebr., who recalled the service he rendered the Local by refusing to play a one-week engagement at the Brandeis Theatre in that city when they were on strike. This action of Mr. Mantell speeded up a settlement between the Local and the theatre management, and in appreciation Local 42 presented him with a gold life membership card. This, Mr. Mantell, stated publicly, was one of his most prized possessions.

- The mid-summer meeting of the IA General Executive Board will be held at the home offices in New York City on August 24.

- The late Emil E. Behr, member of Milwaukee Local 164, who died last month, had a very interesting career in his younger days. Back in the 1880's he was a member of a boy's juvenile band that played at GAR conventions in Washington, D. C., Milwaukee and St. Louis, later hitchhiking through Colorado and Texas where he joined the Rogers and Costello wagon show and circus. He spent several years traveling with a minstrel show that played in every state east of the Mississippi River. He worked with showboats, carnivals and orchestras until 1909, and in 1910 when he was in Hot Springs, Ark., he ran a number of the early motion pictures. He then went on to Milwaukee where he opened the Lisbon Theatre, later working in various picture houses in the state of Wisconsin.



A discussion of 3-D projection by Merle Chamberlin (center) projection supervisor for M-G-M Studios, Culver City, Calif., was the highlight of the recent 6th District Convention. Seated at left is IA Representative E. J. Miller, who is also business representative for Houston Local 279, and at right is Al Johnstone, member of New Orleans Local 293, 6th District Convention chairman.

Motiograph Stereosound Installed

Motiograph stereophonic sound has been installed in West Virginia's largest theatre, the Kears, in Charleston. Other installations in the area include the Freeman at Northfork, the Grand at War, Ritz at Hinton, and Plaza at White Sulphur, W. Va.

Also announced by Motiograph was the installation of stereosound at the Yorktown and Fairmount theatres in Cleveland, Ohio.

By Sept. 30, Motiograph expects to have completed delivery of over 100 stereophonic sound systems with one or two separate magnetic reproducers. These installations and those made by other equipment companies will then show over 600 theatres so equipped, Motiograph estimates.

Pension Protection — Goal of Labor

Foremost in the minds of Labor men these days is adequate pension protection, a topic which has generated intense interest in IA ranks for many years past. This is the second in a series of articles which reflects the official view of the AFL.

II

FACED with the choice, one union may properly decide that a pension plan would be a desirable immediate objective. Another may feel that its members cannot at present afford to divert any part of their potential wage gains into a pension fund.

In considering this issue, certain facts should be borne in mind. Pension funds are designed to serve but a single major purpose: to help meet the need for an assured income after a person's working life is over. Depending upon the person's present age, that particular contingency may be relatively remote as compared with other more pressing ones.

Need For Liquid Cash

In contrast, a wage increase can be used for any number of purposes. It may be added to savings or used to provide an immediate higher standard of living. As liquid savings it will be available for other urgent needs as well as that of old age — the education of one's children, medical expenses, living expenses during unemployment, payments on a house, or anything else that chance or choice might require.

In extreme cases, the answer should be fairly obvious. Where the wage scale of a particular group of workers is at or near the bare subsistence level — or too low to provide decent food, clothing, housing or medical care — wage increases should be the first order of business.

Even though the problems of the aging in such a group are very serious, to sacrifice a possible wage increase in order to set up an expensive private pension plan would leave that group "insurance poor." This is one of the many reasons why private retirement plans can never meet the broad national problem of old age insecurity. The Federal Social Security system is the only practical means of solving that large problem.

While limited to one main function, a well-constructed pension plan performs that particular function very well. There are many groups, therefore, that may derive substantial advantages from the negotiation of a sound retirement plan.

Protects Living Standards

This might be true, for example, in the case of a union whose members enjoy a scale of wages high enough to provide a margin of economic safety after imme-

mediate needs have been met. For such a group, Social Security alone — plus what they may have been able to set aside individually — may mean too sharp a drop in their accustomed standard of living after retirement.

While a good pension plan is certainly not one of the cheaper things in life, the benefits which the individual member stands to get out of a group plan are much higher than he could possibly provide for himself if he were to set aside his pro-rated share of the cost of the plan in the form of individual savings. Of course, in return for this chance of higher benefits, he runs the chance of never getting anything back out of the fund at all.

Like a lottery or a baseball pool, some of the participants must lose out, if others are to get out of it what they expect. A member pays for the assurance that if he does live until retirement, and meets any other qualifications that might be written into the plan, he will receive

3-D Projection Faults

Dr. Elkan R. Blout, research director of the Polaroid Corp., reports that 75% of the theatres checked in a survey just completed presented 3-D pictures perfectly, but in over 20% of the theatres some projection faults were noted. The most common difficulties discovered were:

1. Faulty synchronization.
2. Lack of consistent inspection of the screen to check framing, synchronization and focus of the projected images.
3. Prints mismatched during splicing. When a splice was made, exactly the same number of sprocket holes was not accounted for, resulting in mismatched images.
4. Unevenly matched light intensities of the two projected images. This may be due to a difference in the tone of the two paired prints, but is more often caused by the light from one projector being brighter than its mate.
5. Improperly positioned projection filters. The axis of polarization must be precise so as to match the axis of viewers worn by the audience. Out-of-position filters can do as much damage as an out-of-focus lens position.

a guaranteed income for the rest of his life.

The relatively high benefits, in relation to the per capita cost, of a pension plan are made possible through tax savings and interest earnings on the funds held in reserve, and through the operation of the law of averages which will apply where the plan covers a substantial number of members.

Pooled Risks, Pooled Benefits

By negotiating these plans through collective bargaining, workers can pool their respective risks and resources so as to take advantage of the law of average and the economics of group participation, to provide those who qualify under the plan with a higher retirement income, at a lower cost, than they could otherwise obtain. They can spread this cost in a systematic and relatively convenient way over the span of their working and earning lives. In short, they can obtain benefits as a group which would be beyond their reach as *individuals*.

As the older men retire, new job opportunities are opened up. In slack times, the retirement of older workers may save the jobs of younger men who would otherwise be laid off. The retirement problem is therefore related to the broader problem of keeping *involuntary* unemployment at a minimum.

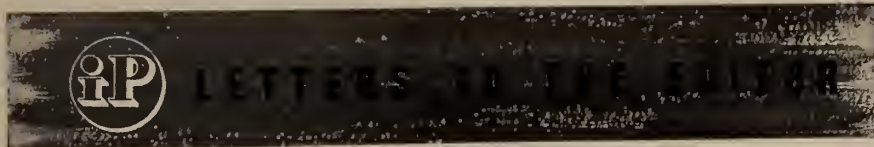
Pensions and Income Tax

A very important point with regard to pension plans is the fact that under the regulations of the Bureau of Internal Revenue, employer contributions to a pension fund are not counted as a part of the employee's wages for the purpose of the withholding or income tax at the time these contributions are made. The employee does not have to pay any income tax on these amounts until he actually retires and begins to receive the pension.

At that time, the portion of his actual pension which is derived from employer contributions is counted as income and taxed accordingly. However, the employee will not have to pay a tax on his pension unless his total income, including the pension, after retirement is high enough to put him in a taxable bracket.

Provided the plan is approved by the Bureau of Internal Revenue, the employer derives a substantial tax benefit from his contributions to a pension fund. These contributions are regarded as a cost of doing business and the employer may deduct the full amount from his taxable income, even though these contributions to the fund are in excess of the amount actually being currently paid out of the fund in the form of pensions. The interest income earned by an approved fund through the investment of its reserves is likewise exempt from taxation.

[TO BE CONTINUED]



To the Editor of IP:

Your editorial suggestion (IP for July, 1953, page 3) is an excellent idea, and I offer my pioneering efforts dating back to 1913. I have seen early attempts at the so-called 3-D, and I can assure you that none of the present methods have new or fundamental physical (optical) ideas that haven't been recommended and tried before (better than 25 years ago), for both still and motion pictures, in black-and-white as well as in colors.

I actually built a "wide-screen" camera and a projector as early as 1920, using 17½-mm merely by modifying the 35-mm picture gate, applied for U. S. patents and subsequently abandoned it because of lack of financial cooperation. By means of this system I was able to get the benefits of a sound track used in a 35-mm projector with a small picture frame, and, at the same time gave rise to the now so-called wide-screen effect.

This idea was termed as a "sub-standard" system, and at a later time it was tried in England. The results were indeed excellent (on the screen), but the industry would not accept it at the time. Other modifications were as by optical means and accomplishing the same result, but that soon introduced new technical difficulties — too many to review in this limited space.

SAMUEL WEIN
98 Bigelow Street
Quincy, Mass.

To the editor of IP:

Thumbing through the July issue of our favorite trade journal, IP, we read an article entitled "Water Cooling for Projection Carbons — What Are the Facts?" And we are still wondering what the "facts" are because we don't recall seeing any in the article.

We have been under the impression that this is August, 1953 — not 1949! It seems rather odd for anyone to imagine that the whole motion picture industry should cling to the policy of turning out the same old lamp, cooler, or what have you, year after year without any thought of improving the product. Of course we aren't located in a technological vacuum out here on the West Coast. We even have the idea that we're rather progressive.

We do manufacture Hydro Carbon Coolers for projection arc lamps — and we insist that our product does not resemble the "screw-on" devices referred to in the July issue of IP as having been

studied by Messrs. Jones, Bowditch and Finkelnburg. Our product does not resemble this device in either size, shape or efficiency. In any case, doesn't it seem rather futile to relate 1949 tests to a 1953 product?

As for how to get more light, we're perfectly willing to let our Hydro Carbon Cooler speak for itself. Seeing is believing!

As for cooler operation, we dare anyone after a twenty-minute run to remove the positive carbon bare-handed from any arc projector not equipped with a carbon cooler. To those who don't believe

that carbon cooling makes any difference, ask any projectionist who works with one.

In answer to the question "Why slower carbon consumption?" any theatre operator can tell you that the less carbon consumed the lower his operating expenses.

We'll frankly admit that Hydro Carbon Coolers are not essential to 3-D projection. Neither is an arc lamp, if you come right down to cases. It is possible, we suppose, to show a 3-D picture using a couple of flash lights. We doubt, however, that results would be very satisfactory.

HAL HUFF
Hal I. Huff Mfg. Co.
Los Angeles 7, Calif.

Polaroid's Device Keeps 3-D in Sync

TWO new devices developed by the Polaroid Corp. to enable projectionists to correct troublesome "out-of-sync" conditions in 3-D showings were demonstrated this month at an informal meeting of technical executives of the various motion picture companies held at Warner Bros.' home office projection room in New York.

The two synchronization monitors, which make it possible to maintain perfect sync at all times during a 3-D showing, were demonstrated by L. W. Chubb, senior research engineer for Polaroid, who reported to the meeting that a survey of some 70 theatres, mostly in the New England area, indicated that 20 per cent or more of 3-D showings were out of sync to a sufficient degree to cause discomfort to the audience.

Mr. Chubb demonstrated an electronic synchronization monitor, which provides an automatic warning for any mis-synchronization up to four frames, and a cheaper and more compact stroboscopic model which scans the screen and indicates by a break in its line pattern any partial frame out-of-sync condition. Both monitors are accurate to one-tenth of a frame. Beyond one frame, it was demonstrated at the meeting, "out-of-sync" can be detected by the trained eye of the projectionist.

Synchronization control devices, to rectify out-of-sync conditions once they are discovered with the aid of the monitor, were also demonstrated by Polaroid. These devices are particularly helpful because they enable the trouble to be corrected while the film is being shown, something not possible until now.

When the selsyn interlock is used for 3-D, two types of sync control can be employed: one is a differential selsyn

between the two existing selsyns, and the other a multiple snap switch inserted between the selsyns with steps equivalent to 1/10th of a frame variance at each interval. For mechanical interlocks, a mechanical differential has been developed.

It was announced that pilot quantities of the Polaroid Corp. devices would be available this month, with the stroboscopic synchronization monitor and control device available together for a price estimated at less than \$100. These devices are expected to be widely used because at present it is possible for 3-D films to get slightly out of sync during a showing despite the best efforts of projectionists and the best equipment.

The meeting at which the 3-D monitoring devices were demonstrated was the second in a series of informal gatherings under the chairmanship of Frank E. Cahill, Jr., of Warner Bros. Purpose of the meetings is to discuss the problems of the new techniques from the point of view of the projectionist and aid him in handling new equipment.

Among those participating in the first two meetings were: J. J. Kohler and M. D. O'Brien, of Loew's, Inc.; Harry Rubin, of United Paramount Theatres; Charles Horstman, RKO Theatres; H. H. Heacock, A. J. Platt and J. F. O'Brien, RCA; C. J. Bachman, Henry A. Eberle and C. A. Piltz, Stanley Warner; L. W. Davee, Century Projector Corp.; William Hecht, International Projector Corp.; J. R. Johnstone and P. D. Ries, National Carbon Co.; Boyce Nemec and Allen P. Snody, SMPTE; A. J. Rademacher and Elmer Wilschke, Altec Service Corp.; G. F. Sandore, of RCA Service Co.; J. W. Servies and John Currie, National Theatre Supply, and Basil Wedmore, of Westrex Corp.

STEREOSCOPIC PROJECTION AND PHOTOGRAPHY

(Continued from page 8)

outside mirrors from each other is increased, depth is greatly exaggerated as one looks into the two inside mirrors.

This apparatus may be simplified by building only one half of it, using one inside and one outside mirror. One eye will then look directly at a scene, while the other eye receives its image by reflection from the two mirrors. It will probably be necessary to adjust the tilt and angle of the mirrors quite a bit in order to obtain the best results.

It is of interest to note that the interocular distance of many prism binoculars is greater than the interocular distance of the eyes. But because binoculars act like telephoto lenses in a camera, there is no increase in stereopsis. In fact, depth is lost because of the long focal length of the objective lenses.

3-D with a Box Camera

Readers who have ordinary box cameras can easily take real 3-D pictures which may be viewed through an old-fashioned stereoscope. Fasten a small flat table-board to a camera tripod. At each end of the table-board, on its upper surface, place a "guide strip" of wood or other material for the side of the camera to "bring up" against. If correctly put together, the two guide strips will be parallel to one another, and will permit the camera to be shifted laterally from one end of the board to the other by about 4 inches.

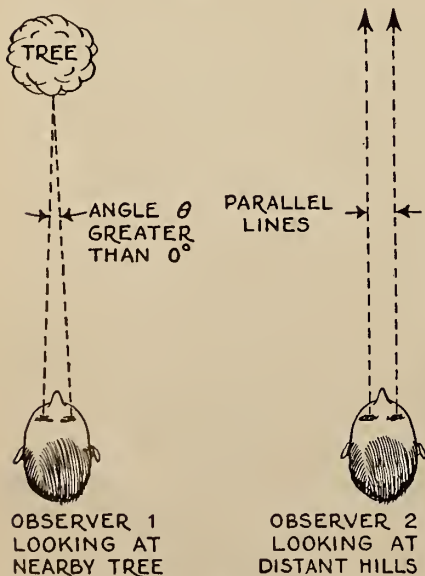


FIGURE 2

Place the camera on the table-board and bring it up firmly against the left-hand edge-guide. Snap the left-eye picture. Roll the film down to the next exposure, shift the camera laterally so that it brings up against the right-hand guide-strip, and snap the right-eye picture.

Because it takes a moment or two to roll down the snapshot film and to slide the camera over, there should be no movement in the subject between exposures.

Line Up Photos

When the paper contact prints are made, determine which are the left and right pictures. (Foreground objects are displaced to the right, relative to the background, in the left-eye picture, and *vice versa*.) Then cut the pictures to size (from 3 to 3 1/4 inches wide) and paste them on cardboard the size of a stereogram card (3 1/2 by 7 inches). To line up the photos, be sure that identical objects in the two pictures have the same height from the bottom edge of the card, and are separated laterally by exactly 3 1/4 inches in the case of the most distant background details.

With the snapshot-camera rig described above, it is possible to perform a number of "tricks" with 3-D, including double-exposures, trick printing and "paste-ons," vastly increased interocular distances, unusual camera angles, etc.

Stereo Composition

But right at this point it is well for us to realize that a stereophoto of a distant landscape, no matter how beautiful, is stereoscopically a dud unless foreground objects have been included in the composition of the picture. Many of the most thrilling and awe-inspiring sights in nature do not depend upon stereopsis for their effectiveness. The scenery in the Rocky Mountains or at Grand Canyon is so overwhelmingly magnificent that it is difficult for us, at first thought, to realize that it is no more stereoscopic than similar scenery reproduced on the regular "2-D" movie screen. Distant mountains and deep canyons — in fact *all* scenery farther away than 900 or 1000 feet from an observer — are absolutely "flat" as perceived by human vision.

DIVERGING SIGHT LINES WHEN VIEWING DISTANT BACKGROUNDS IN CLOSE-UPS PHOTOGRAPHED BY "CONVERGENCE"

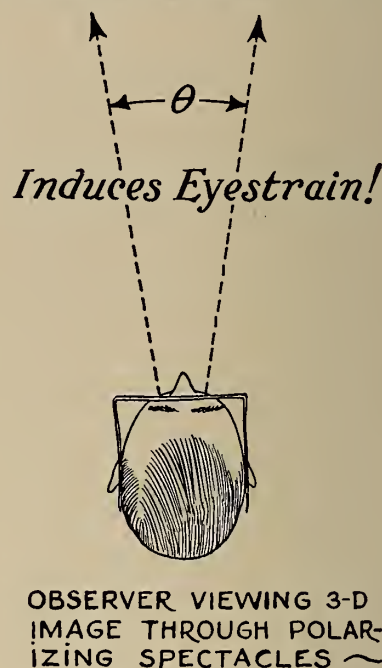


FIGURE 3

Amateur photographers can prove this to their satisfaction on their next mountain-climbing expedition or trip to the Grand Canyon. Take two sets of stereophotos of each scene of nature's grandeur, one set including a foreground object in each stereophoto — rock, tree, or person — and the other having no foreground within range of the camera.

Foreground Objects

On examining the pictures through a stereoscopic viewer, it will be found that stereoscopic depth appears only in that set of photographs which includes foreground objects. The distant mountains appear as flat as scenery on a theatrical backdrop; and only the foreground provides the stereoscopic depth.

The set of photos in which foregrounds are absent could be duplicated exactly by non-stereoscopic photos, using identical prints for the left and right pictures. The only impression we get from looking at them is the feeling of an indefinitely great distance, but no stereoscopic depth.

The impression of both distance and depth can easily be obtained in conventional "flat" movies, as we have said, by dolly shots in which the ap-

parent movement of foreground objects serves to orient the mind of the observer toward an impression of actual space. The uncanny ability of ordinary movies to provide pseudo-stereopsis is well illustrated by films photographed from speeding railway trains and automobiles, diving airplanes, etc. The roller-coaster sequences in Cinerama's spectacular exhibition were no less effective for the lack of true stereoscopy.

Convergence Explained

The term "convergence" in stereophotography refers to the "converging" of the two lenses (or diagonal mirrors) of a stereocamera upon a chosen foreground subject. Instead of aiming straight ahead, the two optical axes of the camera "point in" and intersect at the selected foreground subject. It is probably the very worst technique ever to afflict theatre movies.

To make the matter of convergence clear, let us see what happens when we look at near and distant objects in real life and in a stereoscopic photograph.

Suppose we look at a nearby tree. Our eyeballs turn toward each other very slightly so that the optical axes of our two eyes converge upon the tree, meeting there to form an angle. Now suppose we look past the tree to a distant object — a mountain. Our eyes now turn so that their optical axes are practically parallel to each other. The parallax-angle is now almost nonexistent.

When we look at the tree, the mountain-background is only a double-imaged blur. And when we look at the mountain, the tree-foreground is likewise a double-imaged blur.

Viewer's Eyes Converge

Assume that we have made a stereogram of this scene — nearby tree and distant mountain — and that we ex-

(Continued on page 28)

IA ELECTION

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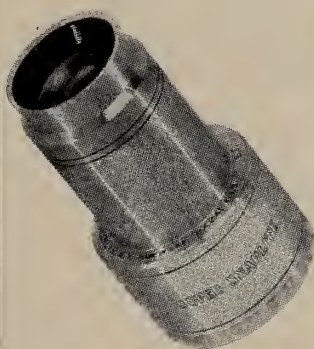
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Strong's 'Super 135' Is Designed for 3-D

The Strong Electric Corp. is now in production on a new arclamp, known as the "Super 135," designed to meet the demand for a greatly increased volume of light in 3-D and wide screen projection. The company also has available equipment for converting the familiar Strong "Mighty 90" lamp to utilize 2 new carbon trims which provide greatly increased illumination.

A feature of the new "Super 135," according to the company, is the Strong Infra-Ban Beam-Cooler unit which permits large increase in light without a corresponding increase in heat at the aperture. This filter device deflects the ultra-violet heat rays of that arc away from the aperture and back into the lamphouse from which heat is withdrawn through the stack by a mechanically induced air flow.

Accommodating a 20-inch carbon, the

"Super 135" can burn the 10-mm Hitex carbon at 120 amperes for a full hour as required by the 5,000-foot 3-D film reels. Lamps which accommodate only 14-inch carbons can operate at this amperage no longer than 48 minutes without retrimming.

The position of the positive arc crater at the exact focal point of the reflector is automatically maintained without manual adjustment by means of the Strong Bi-Metal Lightronic tube which governs the speed of the motors that advance the carbons. Another feature of the lamp is unit construction, whereby the various components are easily removable so that the lamp can be adapted to future developments in carbons or burning techniques.

Strong also announces new equipment to raise the amperage of the "Mighty 90." With the proper combinations of

negative heads, positive drive motors, carbon contracts and carbon drive roller sets, the company claims that the 11-mm regular uncoated carbon can be burned to 120 amperes, and the new 10-mm Hitex carbon or equivalent can be burned to 135 amperes. It is further claimed that approximately 25% more illumination can be obtained at 135 amperes with the 10-mm Hitex than with the 10-mm regular at 105 amperes.

Necessary parts required to burn any of these carbon trims can be supplied either as original equipment on new lamps or as conversion parts for field installation in older lamps. Further information of the new "Super 135" lamp or on the conversion parts for the "Mighty 90" may be obtained by writing to Strong Electric Corp., 31 City Park Ave., Toledo 2, Ohio.

TESMA-TOA Equipment Show

Interest in the new film techniques and the great volume of new equipment now going on the market is expected to draw a record attendance to the Fall trade show of the Theatre Equipment and Supply Manufacturers' Association, scheduled to begin October 31 at the Conrad Hilton Hotel in Chicago. The Theatre Owners of America will also participate.

More than 100 booths have already been reserved although the show is more than 2 months away, according to Roy Boomer, secretary of TESMA. He also stated that an open forum will be held during the conventions of the two organizations to discuss standardization and the future possibilities of the new processes.

Copper Drippings Salvage Ends

Lifting of controls on the use of copper and general easing of the copper supply situation has removed the primary motive for the Copper Drippings Salvage Program which was initiated in 1951 by the National Production Authority to aid the defense effort. In announcing the end of the program, the Authority thanked theatre projectionists, film carriers, exhibitors, trade journals and others in the industry whose cooperation was largely responsible for the success of the program.

The first small portable "hand" camera was made in 1855 by B. J. Edwards.



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ALTEC SERVICE CORPORATION has more than 200 engineers actively engaged in the servicing of motion picture projection and sound equipment and the investigation of every new projection and sound technique including theatre television. Their knowledge of new equipment and improved servicing techniques is checked at Altec's laboratories and distributed to every Altec Service Man. This circulation of information provides your local Altec Service Man with the useful experience and knowledge of

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OBITUARIES

F. EARL WRIGHT, 63, member of Projectionist Local 433, Davenport, Iowa, Rock Island and Moline, Ill., died June 27 shortly after undergoing an emergency operation. Wright served Local 433 in various official capacities, and up to the time of his death had been employed at the Capitol Theatre in Davenport, a position he held for the past 27 years. For many years he represented his Local as delegate to the Tri-City Federation of Labor and to the Iowa State Federation of Labor Conventions.

Funeral services were conducted by the Masonic lodge of which he was a member. He is survived by his wife and six children.

EMIL E. BEHR, 79, member of Milwaukee Local 164 since 1911, died July 23. Although he retired from all craft activities in 1944, Emil Behr continued his membership in the Local to the day of his death. He was a gentle, kindly man who had the esteem and affection of his brother craftsmen, and his passing will be mourned by his many friends in the industry. Survivors are two sisters and two brothers, one of whom, Walter A., is vice-president of Local 164.

JACK AUSTIN AYRE, 54, member of Local 461, St. Catharines, Ont., Canada, died July 5. He was very well known in projection circles in North Ontario, having worked at the craft for the past 36 years.

CLYDE H. AUSTIN, member of Local 321, Tampa, Fla., died last month after a short illness. For the past 27 years Austin, who was only 54 at the time of his death, worked at the Royal Theatre in West Tampa, and was highly regarded by his many friends in the industry. He is survived by his wife and two children.

MILLARD ALFORD, 54, member of Local 589, Jackson-Vicksburg, Miss., died last month at the Baptist Hospital in Jackson. Alford joined the Local back in 1926 and at the time of his death, he worked in the projection room of the 51 Drive-In Theatre.

JOHN A. FISHER, 68, member of St. Louis Local 143 since 1909, died last month after a two-week illness. A staunch and loyal unionist, Fisher was an active worker in fund-raising campaigns for the Local back in the days when it depended upon the proceeds from "movie balls" as its chief source of revenue. He worked in many film houses in St. Louis, last being employed at the World Playhouse. He is survived by a son, John J., also a member of the Local, and one daughter, Mrs. Margaret Nilhas.

Color Tv Near Approval

Color television for the home has received tentative FCC approval, but it probably will be quite a while before color Tv can bother the motion picture exhibition field competitively.

Only a few experimental color Tv sets are now in existence, and production probably will be in very small quantities

for some time after final FCC approval which is expected this Fall. Estimates of prices for color Tv sets range from \$700 to \$1,000 for the first color models with a screen size considerably smaller than that of most black-and-white Tv receivers now on the market.

The color system that the FCC proposes to authorize is sponsored by the National Television System Committee, a technical group representing the entire Tv industry. The system is similar to the plan proposed some years ago by the Radio Corp. of America but rejected at that time. It solves many problems because it is what the Tv industry calls

"compatible," that is, the color images transmitted by this system can also be picked up in black-and-white on present receivers.

3-D Effect for Video

A television set designed to give viewers an image with a 3-D effect has been announced by D. J. Roesch of Los Angeles. Equipped with a 27-inch tube, the receiver is said to provide more depth than has previously been possible, but it is not a true 3-D process such as the movies attain through the use of double images and glasses, Mr. Roesch said.

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New Synthetic Film Base by Du Pont Detailed

A NEW synthetic base for motion picture film, said to be much stronger than the present types of acetate safety film base, will be manufactured by the Du Pont Co. at a new fac-



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tory unit to be built at the firm's Parlin, N. J., plant with production beginning in 1955. The Du Pont announcement states:

"Extensive tests have shown that the new base, identified as a polyester and related chemically to the Du Pont textile fibre, Dacron, is several times stronger and has much more dimensional stability than any of the present types of safety film base, and has comparable flame resistance. For use in motion picture film, this new polyester offers the important added advantage of reduction in film thickness, making possible greater footage per reel. Polyester film has higher clarity than conventional film bases, and appears to have better storage and aging characteristics.

"The new base was developed and is currently being made in limited experimental quantities. Construction of the full-scale unit at Parlin will start in the near future, and completion and initial production are forecast for the middle of 1955.

"Compared with either cellulose nitrate or cellulose acetate films, polyester has twice the tensile strength and tear strength, and can be stretched more than 4 times as far before breaking. It is virtually unaffected by immersion in water or changes in humidity. In a test of folding endurance, polyester film with-

stood 17,000 flexings, while an ordinary film failed after about 100. Polyester film showed virtually no signs of wear after 3900 runs through a motion picture projector; perforations on standard films wore out after 1400 projections.

"Because of its greater toughness and flexibility, the polyester base makes it possible to reduce the thickness of standard motion picture film from 5½ mils to 4 mils (5 thousandths to 4 thousandths of an inch), a 27% reduction. This means that the new base will significantly reduce shipping weight and storage volume per foot of film, besides enabling producers to put up to 35% more film footage on a given reel.

"A 2700-foot reel of 35-mm motion picture film on 4-mil polyester base takes up the same amount of space and weighs approximately the same as a reel holding 2000 feet of film on the current standard safety base.

"An important feature of the process is the fact that there is no industrial waste-disposal problem. No solvents are used in the casting of polyester base, whereas in the manufacture of conventional film base there is a definite solvent recovery problem.

Excelite "135" Developed

An increased volume of light at the screen, without a corresponding increase in heat at the aperture, is claimed for the new National Excelite "135" projection arclamp announced by National Theatre Supply. A feature of the new lamp is the Reflect-O-Heat unit, which passes the visible light while diverting heat rays back into the lamphouse where heat is removed through the stack.

Designed to burn 10-mm Hitex carbons at 135 amperes, or 11-mm regular carbons at 120 amperes, the lamp provides increased light for 3-D and wide-screen projection. For the full-hour running period of 5,000-foot 3-D reels, the 10-mm Hitex can be burned at 120 amperes or the 11-mm regular carbon can be burned at 115 amperes, the company said.

Color value and intensity of the light at the screen is maintained constant throughout the full trim, without the need of manual adjustment, it was stated, by an automatic arc crater positioner. The National Excelite "135" will be sold by all National Theatre Supply branches.

"Movies" first appeared in 1833 when a device called the "Zoetrope" was marketed. This consisted of a cylinder with drawings of a horse mounted on the inside. The viewer looked through an eyepiece, rotated the cylinder and saw the horse galloping.

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PERSONAL NOTES

WALTER FRICK, formerly with the Theatre Equipment Co., Toledo, and recently in charge of six U.S. Army post



Walter Frick who has joined the Strong Electric Corp., Toledo, as sales and service manager.

theatres at Camp Gordon, Ga., has joined the Strong Electric Corp., Toledo, as a sales and service engineer. His territory will include the whole country, and his interests will include projection arc lamps, rectifiers and spotlights for the theatre field in addition to slide projectors for the visual education market.

C & C Dual-Range Rectifiers

The McColphin-Christie Corp. reports that in theatres where new equipment is being purchased for 3-D and widescreen projection, the dual-output ranges of the company's "C and C" 12-phase selenium arclamp rectifiers will be of special interest. The units are available from 1-KW size up to and including Hy Candescent operation.

The dual output range of the rectifiers makes it possible for a theatre to install a given size C and C rectifier today, the company states, operate it on the low output range, and then switch to the high range for more output when amperage requirements increase with 3-D and wide-screen projection. Distributor for the product is National Theatre Supply.

Westrex Magnetic Sound

Westrex announces that it is now in production on a pent house type reproducer which will fit above the projector and under the upper magazine of any standard type projector to reproduce four-track CinemaScope recording or any other multi-track system. Limited deliveries have started and will be greatly stepped up in September and October.

Skiatron Shows Fee-Tv

Public demonstrations of the Skiatron system of collecting fees from the viewer for special high-quality television shows were held recently in New York and attracted considerable attention among radio, Tv and motion picture people.

The Skiatron Corp. calls this system "Subscriber-Vision." It works through

a special decoding device on the Tv set which restores to normal a scrambled picture broadcast from the Tv station. The decoding device is activated through a printed circuit on a card that would be mailed weekly to subscribers. A petition for FCC approval is expected this Fall.

Wide-Screen Shortages

Wide-screen installations throughout the country are being slowed down by equipment shortages, it was revealed by a survey

made early this month. At that time there were only about 200 wide-screen installations ready for operation, excluding those houses that already had screens large enough for the new aspect ratios. The wide-angle lenses needed were in particularly short supply because there has been little call for them in many years.

CinemaScope lenses were being stockpiled by 20th Century-Fox, which had not released any to dealers. Wide screens of the 2.5 to 1 variety needed for CinemaScope were also difficult to obtain. Theatres ordering such screens could not expect delivery until the end of September.

ATTENTION! ALL PROJECTIONISTS!

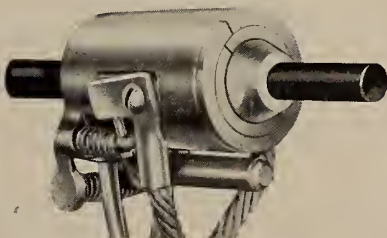
IF YOU want a whiter light and more light on your screen, and if you want a sharper focus picture — even when using the same carbons and drawing the same amperage — INSTALL HUFF HYDRO CARBON COOLERS IN YOUR PRESENT EQUIPMENT.

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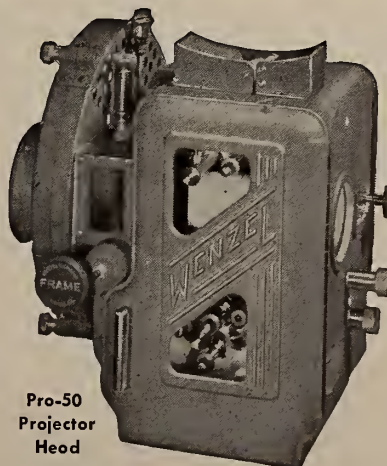
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EVERYDAY SCIENCE

SOUND engineers usually come to the attention of projectionists these days in connection with stereophonic sound, acoustics or some other subject related to the theatre. However, these men have been entering some unusual fields lately. In Ventura, Calif., an oil well drilling rig has been constructed that cuts through the earth with the aid of low-frequency sound waves which "fatigue"

and break up the formation ahead of the drilling bit. These sound waves are carried down into the earth by a method of vibrating the drill casing from above.

• • •

PHOTOCELLS, the familiar component of projection soundheads, have made their debut this year as a "revolutionary" development in the automotive field. A photocell device, mounted inside the windshield and activated by the headlight beams of oncoming autos, automatically dims the headlight beam of the auto in which it is installed. This device is now available as optional equipment on most General Motors cars. It is supposed to eliminate tiresome footwork in night driving and may protect some conscientious drivers from those careless characters who don't bother to step on the button.

• • •

INTEREST in binaural or stereophonic sound has now extended to radio broadcasting in New York City. WQXR is transmitting musical programs in such a way that the sounds normally reaching the left ear in a concert hall are broadcast on an AM band and the right-ear sounds are broadcast over FM. If a listener possesses two radios, one AM and the other FM, he can get binaural musical reception in his living room by properly placing the receivers.

The great Italian artist and scientist, Leonardo da Vinci, noted the principal of the camera obscura as far back as the year 1470.

STEREOSCOPIC PROJECTION

(Continued from page 23)

amine this double photograph through a stereoscope. The scene looks very real — the tree seems much closer than the mountain. This is because the two tree-images of the stereopair are closer together than the two mountain-images. Our eyes must converge to see the tree-image clearly, and they must look straight ahead to see the mountain-image clearly. The binocular viewing conditions of real-life experience are thus exactly duplicated in the stereoscope.

In normal stereophotography the camera lenses point straight ahead to include identical fields of view at "infinite distance." If they did not point straight ahead, but converged by even the tiniest amount, each picture would have a vertical edge-area of scenery not included in the other. Moreover, any defects in the lenses such as spherical aberration, pincushion distortion, or barrel distortion would

then show up as a binocular aberration.

To converge the two lenses or diagonal mirrors of a 3-D camera upon a foreground subject simply because the eyes converge upon the subject that a person looks at in real life is fallacious reasoning and extremely bad practice. Camera-lens convergence produces a "double convergence" because the eyes converge upon foreground subjects in a 3-D reproduction when the camera lenses don't converge! If the eyes should not themselves converge, the picture could not be 3-D!

Camera Convergence Wrong

The evil effects of camera-lens convergence are far worse than the minor defects mentioned above, however.

Suppose that we photograph a stereogram for an old-fashioned stereoscope with the camera lenses "pointed in" to converge upon a foreground object. Inspection of the resulting stereopair after it has been properly mounted on a card, with left and right pictures side by side, will reveal that the effect is exactly the same as that

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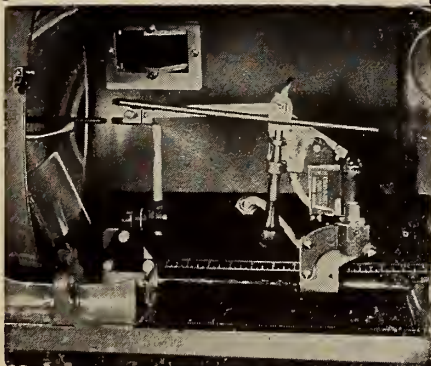
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Burning average lengths (3 1/4") down to 3/4" saves 2 1/2" or 22.2% of the carbon cost.

Uses positive carbon stubs of any length, without preparation. When entirely consumed, the new carbon goes into use without losing the light, or otherwise affecting lamp operation. If your dealer can't supply you, order direct.

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obtained by mounting a "normal" stereopair with the pictures placed farther apart. Let us do this and call the result a "convergence stereogram" and compare its 3-D appearance with that of a normal stereogram.

In the normal stereogram, identical distant background objects of the two pictures will be adjusted to a separation of exactly $3\frac{1}{4}$ inches, the correct standard for the old-fashioned stereoscope of grandma's day. In the convergence stereogram, similar distant background objects will have a wider separation.

Through the stereoscope the normal stereogram impresses us favorably with its realism. The nearest objects will look very near, if sufficient interocular distance was used in photography, objects at middle distance will look farther away, and distant background will look truly distant — far behind the stereogram card. And we are able to shift our vision from foreground to background without discomfort or unnatural effect.

The convergence stereogram, on the other hand, strikes us as unnatural and eye-straining. Something serious is obviously wrong with it. Foreground objects look strangely immense and too far away. Background objects seem to "pull our eyes apart," producing positive physical pain, and the least relaxation of our ocular vigilance allows distant objects to separate into unpleasing double images. Continued viewing produces headache and nausea in susceptible individuals.

Is this a mere guess, or a matter of mental suggestion? It is neither!

How Eyestrain Results

The physiological effect of convergence stereophotography is illustrated in Fig. 3. The observer pictured is assumed to be looking at the distant background in a 3-D movie close-up filmed by the convergence technique. Note that the background images force the eyeballs of the observer to turn so that the optical axes of his two eyes

diverge, rather than converge or remain parallel, as in normal viewing. The nearer the screen the observer sits, the more his lines of sight will diverge. Not only is this visual experience painful, but, because our eyes are not made to turn outward beyond parallel lines of sight, it must be regarded as harmful.

To repeat: the properly aligned 3-D camera "looks" straight ahead, but the 3-D movie patron's eyes converge automatically and naturally upon the nearer objects in the picture.

The foregoing discussion suggests how the projectionist can actually eliminate or create the effects of camera-lens convergence on his 3-D screen regardless of how the picture was photographed. A study of Fig. 4 will make the matter clear.

The screen depicted at the left shows the superposition of the left- and right-eye images of distant and near objects in a correctly aligned polarized-light picture. Note that the left and right images of a presumably "infinitely distant" object coincide to give a single image when viewed without Polaroid glasses, while in the case of the near object the left-eye image is formed at the right of the right-eye image.

Eyeballs Turn Outward

Compare this with the screen on the right, which depicts the superposition obtained by the convergence technique. Here the left and right images of the foreground object coincide, making an actor's face appear as far away as the movie screen, and enormously large. Observe, also, that when the patron looks beyond the actor's head to the "infinitely distant" background, the optical axis of his left eye

must turn outward to the left (dotted circle) while that of his right eye must diverge to the right (continuous circle). This is the divergence that seems to pull the eyes apart, and actually does do just that!

A little careful thought suffices to reveal that the natural 3-D effects de-

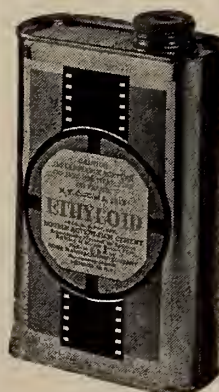


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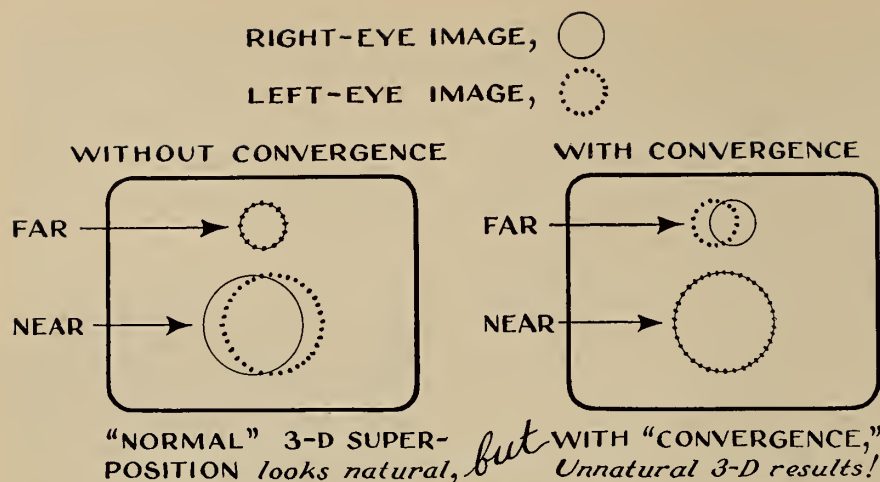


FIGURE 4

picted on the screen at the left can be duplicated on the other screen by turning the picture projectors in toward each other by a very slight amount—an amount just sufficient to make the two images of the “infinitely distant” object superimpose in exact registration. This simple projection-room expedient actually destroys all of the undesirable “convergence” effect, but it is not a practical step. Because the amount of convergence is variable, changing from scene to scene, it is clearly beyond the power of any projectionist to line up his projectors to overcome it.

By reversing the process (that is, by turning the projectors outward very slightly) the effects of convergence-photography can be introduced into a correctly photographed 3-D film. This is something no projectionist would wish to do.

Seating and Convergence

It might seem that a slight amount of convergence is desirable because it introduces *distance* into the picture. A patron in the middle of the auditorium may be 40 or 50 or 60 feet from the screen. Without convergence, the most distant landscape appears to be as far away as the screen. Is the screen in the average theatre too close to the observer for the most perfect stereopsis when no convergence is used in the 3-D photography? Experience indicates that it is not, and common sense cautions us against introducing a convergence-effect which, while giving perfect “distance” for patrons in the rear of the auditorium *who need no additional “distance,”* strains the eyes and good dispositions of patrons seated near the screen.

Use of convergence-photography

pushes everything in the picture away from the observer while seeming to magnify objects. Even though relative distances and depths are preserved—parallax differences remain the same,—the effect is unnatural and, as we have said, wrenches the eye-muscles of the patron who looks at background objects in close-ups. And there are two other flaws in the convergence technique.

Intimacy Lost

All feeling of intimacy is lost in a convergence-photographed 3-D film. The actors seldom “come into the audience” as they should do in all close-up shots. The background, it is true, may look much farther away than the

actor (thus suggesting the actor’s proximity), but there is no true-to-life intimacy. Conversely, the theatre patron is never “projected into” the picture as he would be in a correctly photographed 3-D picture. Stereoscopic illusion most certainly exists, but it fails to duplicate the visual sensations of real-life conditions.

Variable-convergence reduces the stereoscopic effectiveness of long-shots. When the patron has become mentally adjusted to the stereoscopic image of the walls of an interior set at a visual parallax which physiologically suggests an “infinite distance” (or even more than that!) he is not going to be overawed, or even pleased, by a subsequent scene which shows distant hills at a visual parallax which physiologically suggests a distance no greater than the distance to the picture screen. In a word, the walls of the interior shot look, or rather “feel,” farther away than the mountains of the long-shot!

Producers of motion-picture films can do worse than think twice before committing their expensive 3-D productions to the inevitable horrible visual consequence of the convergence method of filming. Cinematographers should protect the quality of their work by acquainting their directors with the facts of motion-picture stereoscopy.

[TO BE CONTINUED]

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MONTHLY CHAT

PROJECTIONISTS will have their fingers crossed as the first public showings of "The Robe" are held in New York and Los Angeles. This is the first CinemaScope picture, complete with stereophonic sound, Miracle Mirror screen and the "anamorphic" lens.

As this issue of IP goes to press, the critics and the public have yet to speak their piece.

We think the Twentieth Century-Fox aspect ratio is exaggerated. So does Henri Chretien, designer of the hypogonar lens, the heart of CinemaScope.

Chretien, in New York for the premiere of his process at the Roxy Theatre, thinks the wide-angle lens in the wrong directorial hands can be ridiculous. As he puts it, wide angle is fine for spectacle. For an intimate "soul kiss", — fifteen feet wide! — never!

IP has said it before, and we'll say it again: The wide-screen in the Fox aspect ratio, 2.55 to 1, is absurd. The wide screen in a sensible ratio, an absolute maximum of 2 to 1, would be acceptable to the public. However, like everybody else, we'll wait and see what happens to "The Robe." By this time next month the returns will be in and IP will carry full reports from the premiere cities.

Which brings up something else. Exhibitors have been having a field day with wide screens of their own. The public has been cheated, gypped and robbed.

As an example, one New York news reel theatre advertises a "giant wide screen." The theatre goes Alice in Blunderland one better. "Off with his head," said the Queen of Hearts. "Off with his head and off with his feet," is the theatre's slogan. President Eisenhower makes a speech and all the audience sees is his wagging chin. The top of his head just isn't there. Bugs Bunny jumps off at the top of the screen and falls off at the bottom. The public is gypped out of half the picture, via exaggerated masking.

Also in New York, another theatre has installed a Miracle Mirror screen — with a good six inches of keystone. Watching the picture is painful because of the annoying streaks of light.

In both of these cases — and there are hundreds more throughout the country — the public is under the impression that it's the real thing — and the public doesn't like it.

The point is simply this: If we're going to have new things in pictures, let's have them right or not at all.

The public-be-damned attitude just won't work. If some exhibitors want to slit their own throats, that's okay by IP — but not when they hurt the whole industry at the same time!

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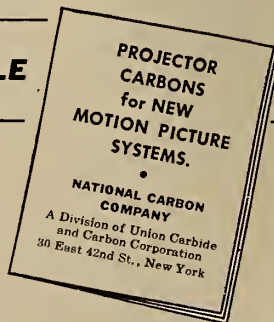
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Does CinemaScope Have the Answer?

Swirling around the 20th Century-Fox system called CinemaScope is a seething controversy. Will it work? Is it art? Will four-track film stand punishment? Here's what Fox has to say!

By THOMAS L. BURNSIDE

MOTION PICTURE production executives, nothing if not modest, are apt to go overboard in their lurid lyrics about anything new in their trade. Consider Darryl F. Zanuck's colorful comments on CinemaScope.

CinemaScope, said Zanuck, vice-president in charge of production for Twentieth Century-Fox, gives the motion picture "a potential unequalled in all the long centuries of theatrical history."

CinemaScope, he added, "is an Emancipation Proclamation on the sound stages."

Referring to CinemaScope as producing a "Technological revolution" and "providing a new artistic stimulus to our industry," Spyros P. Skouras, president of Fox, said in a formal statement:

Realistic Impact

"It may truly be said that never before have we had an opportunity to present entertainment so realistically, with such magnitude of expression and with a good third-dimensional illusion giving a sense of audience participa-

tion in the small theatres as in the large ones.

"Twentieth Century-Fox has embraced CinemaScope with unreserved faith as a means of combining the creative ability of our industry with scientific achievement to present finer pictures in CinemaScope and in Color, beginning with 'The Robe'."

Should these expressions of happy enthusiasm by Skouras and Zanuck seem a bit in the "terrific" and "colossal" tradition of Hollywood, it should be remembered that Fox is risking everything on this new medium, putting the company's entire production right on the line. Fox is gambling on CinemaScope as the cure-all for the ills of the industry.

It should be mentioned here that no spokesman for Fox has suggested CinemaScope as a substitute for good pictures. Quite the contrary. The story, well told, artistically told, well directed and well acted, is still the thing. Entertainment, not novelty, is still the goal of the producer.

However, this piece is not a critique of the art of movie-making. It is intended to be a sober analysis of CinemaScope from the projectionists'

point of view. Other angles inevitably must be mentioned if the whole story is to be told. But they'll be mentioned in passing.

Briefly, CinemaScope is two systems, not one, each raising its own engineering problems, both in the making of a film and in its exhibition.

More Light Needed

First, there is the picture. Every projectionist knows by now that CinemaScope uses an anamorphic lens to produce an anamorphic effect, to project a wide image on a wide screen, thus giving great sweep to a picture. This raises a number of problems for the projectionist, the paramount one being that of sufficient light at the screen.

To the producer and the director, the wide screen allows a larger canvas on which to paint. To quote Darryl Zanuck again: "It does give us more octaves in which to tell our story and gives our actors greater range for their talents."

Not every producer and director agrees with Zanuck, some seeing the wide screen as being of value only for spectacle. One company, Para-

mount, is frankly afraid of sacrificing height in relation to width. This company, however, is known to be covertly experimenting with wide-angle lenses of the anamorphic type and has been progressively raising its aspect ratios.

To quote but one film-maker who doesn't like the wide screen, John Huston had this to say:

"I'm worried about the framing. You can show Christ and the two thieves in the wide expanse of screen . . . but how about showing Christ alone?"

So much for the picture. CinemaScope system No. 2 is sound, stereophonic to match the action on the wide screen.

No Sync Problems

Stereophonic sound is not a Fox monopoly by any means. The Fox innovation is the striping of four magnetic sound tracks on the picture film itself, eliminating the need for a separate reproducer and a separate sound film. From the projectionists' point of view this is by far the greatest advantage of CinemaScope so far as his machines are concerned.

Any projectionist who has hopped around a projection room like a flea on a hot griddle, the usual thing when

showing 3-D, will appreciate the single film of CinemaScope — unless some unforeseen "bugs" appear. With 3-D, two machines are running at once for the picture, plus a reproducer for the magnetic sound. Keeping all three in sync is a job for somebody with six arms and six legs.

Just a word at this point about the befuddled exhibitor, the guy who pays the projectionist and who has to pay for the new equipment.

In the August issue of *International Projectionist*, this writer had an article, "What Price Chaos in Sound?" In that piece a leading manufacturer was quoted as urging exhibitors to purchase separate reproducers, even though they planned to play Fox films using the single strip film and the so-called "button-on" "sandwich" or "penthouse" reproducer. A survey by IP shows that this was good advice. Close to 100 pictures, perhaps many more, made by companies other than Fox, will be released this year and next, all with stereophonic sound and all requiring the separate magnetic reproducer. Projectionists, when advising on new equipment, cannot go wrong in advising exhibitors to make the double purchase, both separate and "button-



Above is a sketch of the controversial Fox sound film, four magnetic sound tracks and the picture placed on the same film strip.

on" reproducers, when plans call for playing the product of all companies.

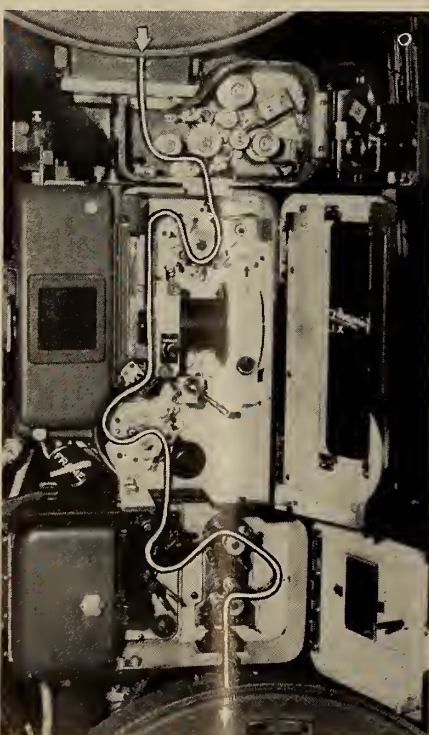
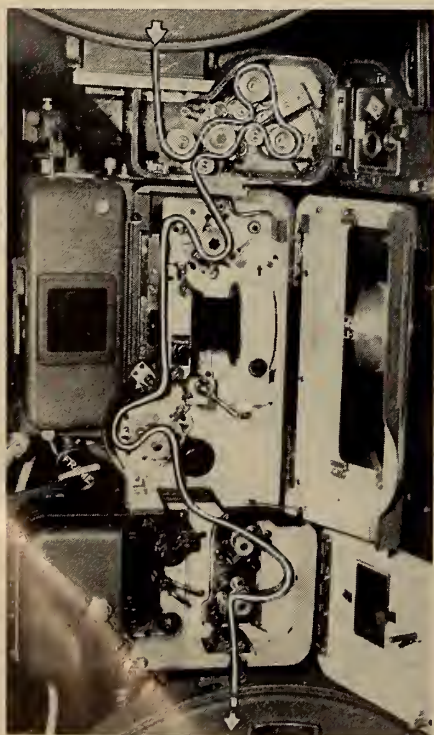
It is quite correct, as Fox claims, that CinemaScope is compatible in the sense that regular 35-mm films with optical tracks can be played in theatres equipped with the "button-on" soundhead. As illustrations accompanying this article show, the magnetic soundhead is simply by-passed when threading for optical sound, and vice versa. CinemaScope equipment, however, is not compatible for pictures in which the magnetic sound striping is on a separate film.

While Fox production and selling executives bubbled with unrestrained enthusiasm for CinemaScope, the company's technical experts wrestled with the problems inherent in bringing "The Robe", the first CinemaScope picture, to the screen. Earl Sponable, chief of the company's Research and Development Division, told IP quite frankly of the difficulties involved. However, he stated flatly that there are no "bugs" that cannot be eliminated by the application of a little engineering DDT.

Magnetic Tracks Durable

Let us take some of the criticisms and questions regarding CinemaScope and handle them in order, quoting Mr. Sponable on each. We're talking now of the engineering problems only. The artistic, as we stated earlier, are outside the area of this article.

The doubt most often expressed in the trade press and by proponents of the double film stereophonic sound



Film threading procedure for projectors on which a "penthouse" magnetic soundhead has been installed is illustrated above. The picture on the left shows the path of the film when the four magnetic sound tracks of CinemaScope are being reproduced by the penthouse soundhead. The single-track optical sound reproducer is by-passed. In the right picture is shown the same projector threaded for standard single-track optical pickup.

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system is this: Four magnetic tracks on one film will not stand up under the pounding of day-to-day projection in a theatre!

Not true, said Sponable! He stated that in independent tests made by Eastman laboratories, in which film was actually punished severely, a loop with four tracks was passed over a magnetic soundhead more than 2,000 times without any deterioration in sound quality. This is well over four times the life of a film in theatre use. In tests made by Fox, he added, a loop was run through some 4,000 times without serious deterioration in sound quality.

The worry on the part of critics has been that sound tracks, right on the edge of the film, would wear badly. This Fox engineers deny.

Demagnetization of Tracks

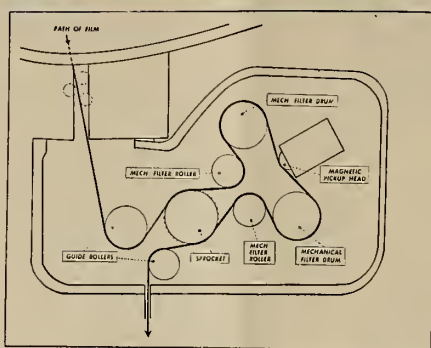
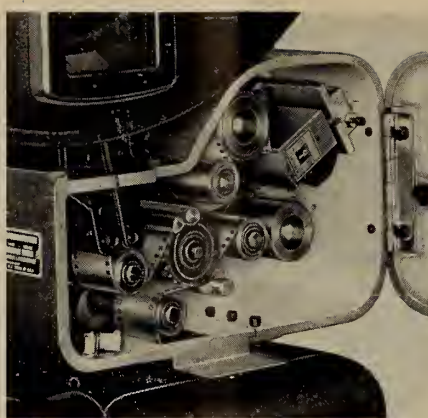
It has been said that the steel projector sprockets will somehow demagnetize the sound tracks with disastrous results.

Mr. Sponable told this writer that he and his engineers had been worried about this possibility and had considered methods to overcome it. However, exhaustive tests showed that no demagnetizing resulted and therefore any revolutionary changing of the sprocket system or material was unnecessary and undesirable.

Sponable used the word "poppycock" in referring to demagnetizing charges. He pointed out, too, that if demagnetizing could occur in the case of the single-film system, so could it occur in the case of the two-film system requiring a separate reproducer. According to the Fox research chief, it occurs in neither system.

There may be some significance in Mr. Sponable's admonition to projectionists to make sure that their equipment is properly demagnetized once or twice a year. This advice, he said, is not peculiar to Fox and CinemaScope. Projector manufacturers urge that this be done even with equipment using optical sound.

A little may be interjected here on magnetic sound and on striping methods for the tracks. Numerous methods for the striping are available, but the basic material to be magnetized is the same in all systems, a form of iron oxide. The oxide is ground exceedingly fine, much finer than is the pigment in paint, and is



The above photograph and diagram show the film-driven sprocket and roller system, and the magnetic pickup inside the magnetic reproducer. The soundhead illustrated is the new Simplex X-L model. The diagram shows the threading procedure for the four-track CinemaScope film as it passes through the "pent-house" soundhead on its way to the aperture.

suspended in a binder. This is then applied to the film strip, highly polished and then exposed to the magnetizing process. There are many advantages to the producer in magnetic as opposed to optical sound tracks, an important one being immediate playback. Others are greater fidelity, an absolute "must" in the case of stereophonic sound.

For the projectionist, Mr. Sponable, quoting from a manual for the theatre now being prepared by Fox, had this to say:

Simple System Required

"Magnetic sound tracks are used with CinemaScope principally because of the simplicity of the reproducing equipment and for the better technical performance which is required due to the use of somewhat narrower tracks and the demands of stereophonic sound. Stereophonic recording requires that at least three tracks be used and extreme difficulty would be experienced in the maintenance of theatre sound equipment if optical systems, exciter lamps and photocells were to be kept within nar-

row performance limits relative to each other.

"Magnetic sound, of course, has its own peculiar problems in the field . . . In general it can be said that with reasonable care and under the customary circumstances in projection rooms, the use of magnetic tracks need cause no alarm.

"Although tests of magnetic film have been made to determine its susceptibility to erasure or the introduction of noise by deliberate exposure to the usual electrical apparatus, such as transformers, motors, generators and rectifiers and no serious effects have been found, it is wisdom to avoid subjecting the magnetic tracks to strong electric fields. If the handling is confined to the usual rewinds, carrying cases and projection apparatus, it is not expected that magnetic film will suffer any more from field use than optical tracks do in their own peculiar way. Obviously, by deliberate intent, magnetic tracks could be ruined, but for that matter so can optical tracks."

The Magnetic Soundhead

It is plain that everything in the immediately preceding paragraphs applies to any magnetic film system, the CinemaScope single strip sound-on-film or the separate reproducer system using two films.

Illustrated in this article is the soundhead used with CinemaScope. The one shown is by Simplex, but all manufacturers in this field either have such reproducers in production or will go into production shortly. Except for minor refinements and differences in design, they are all essentially the same.

This soundhead is installed, as the photograph shows, between the upper magazine and the projector casting. Because of this arrangement, the picture *precedes* the sound on the composite film and a standard displacement of 28 frames has been adopted. Therefore adaptor plates must be used on the film path length, between the picture aperture and the sound pickup head, adjusted to meet this offset on the various models of projectors. It may be necessary also to change the upper magazine type or use an adaptor plate to fit the magazine to soundhead. Projectionists should check their specific equipment situation at the

(Continued on page 27)

Stereoscopic Projection and Photography

There are three, and three only, methods of stereoscopic projection in the theatre. Two, the anaglyph and the parallax barrier, have been tested and discarded, leaving the field to the familiar system using polarization.

By ROBERT A. MITCHELL

II - Third Dimension Projection Processes

STEREOSCOPIC photography for motion pictures is a much simpler procedure than the exhibition of stereoscopic pictures after they have been made.

In 3-D photography we are concerned only with the production of left-and right-eye pictorial records by means of two cameras, the lenses of which are separated by an interocular distance of three or more inches. In the exhibition of the finished 3-D pictures we must utilize some principle by which the left-eye photograph is presented only to the left eye of the observer, and the right-eye photograph only to the right eye, the two separate images merging into a single three-dimensional impression of true stereopsis.

How are these rather difficult viewing requirements to be met? The stereoscopic effect is damaged, we know, if the left eye perceives even a trace of the right-eye image, and *vice versa*. In addition, the two homologs, or pictures, of the stereopair must be developed and printed to the same degree of contrast and density, and they must receive equal illumination when shown.

Projection Is Problem

The exhibition of "still" stereograms is not very difficult if we do not attempt to project them on a screen. The stereograms, comprising prints of the left and right homologs, or pictures, mounted side by side on a card, may be viewed through a binocular instrument called a stereoscope. The stereoscope, which consists of a picture holder and two lenses, one for each eye, allows the left eye to see only the left homolog and the right eye

the right homolog. But only one person can look through a stereoscope at a time.

Whenever we wish to present a photograph to a large audience we must present it highly magnified on a screen. This is a simple matter in the case of ordinary 2-D photographs, but when we try to present stereograms *stereoscopically* we encounter a tough problem. How are we to present to each eye of hundreds of pairs of eyes, or even thousands of pairs, only that one of two images intended for it?

Possible for Theatres

It is possible, of course, to extend the theory of the stereoscope to picture projection in a theatre by using two screens erected side by side and supplying each member of the audience with a telescopic binocular viewer which must be held rigidly in one fixed position. No theatre audience would submit to such punishment and we are thus faced with the necessity of projecting both pictures in superposition on a single screen, and of finding some means whereby the two superimposed pictures may be separated optically and each directed to the correct eye of each observer.

Next Month in JP

Space limitations have forced several promised articles out of this issue of *International Projectionist*. These, our own "dictionary of technical terms" and a piece on theatre television, will appear in October.

Also in the October issue will be a full report on the CinemaScope openings, another piece on stereoscopic projection by Robert A. Mitchell and other important articles, plus a see-at-a-glance chart showing the proper lens sizes for various throws and screen sizes.

There are three, and only three, methods of performing this very difficult optical feat.

One method involves a special grid, called a parallax barrier. This conceals the left-eye image from the right eye, and the reverse — a purely geometrical expedient. The other two methods provide selective lightfilters through which the pictures must be projected and viewed. None of these systems is perfect.

Parallax Barrier 3-D

The parallax barrier 3-D method,* developed very extensively in the Soviet Union by S. Ivanov, requires an intricate grille composed of many thousands of fine wires positioned in front of the screen. Throughout a very limited area in the theatre auditorium each patron, by moving his head to the right or left to locate the most favorable viewing position, obtained a true 3-D effect when the wires of the grid concealed the left eye image from the right eye, and the right eye image from the left eye.

The grid system in this crude form was given a practical test by Ivanov in 1940. It proved so unsatisfactory that it was modified to a system utilizing two synchronized projectors and a screen made up of hundreds of small conical lenses mounted on plate glass. Even though the results were fairly good in a film called "Robinson Crusoe", shown in a small Moscow theatre in 1947, it was obvious that only a limited portion of the auditorium could be used, and observers complained that the 3-D effect was lost the moment the head was moved. We can hardly expect movie patrons to sit like equestrian statues during a movie show.

Ducos du Hauron, of Paris, a pioneer in the field of color photography, suggested as long ago as 1895 that images of the two stereoscopic pictures be printed in specially

* For further information on Ivanov's parallax barrier 3-D system see "International Projectionist" for the following three articles: "Parallax Barriers in Stereoscopes and TV," by Sam H. Kaplan, August, 1952, page 12; "Startling Soviet Films," December, 1947, page 17; "Russia's Three-Dimensional Motion Pictures," by S. Ivanov, April, 1941, Page 12.

selected dissimilar colors and superimposed on a single photographic plate. By viewing this composite image through "analysing" spectacles consisting of two differently colored gelatins, we get the "anaglyph," familiar in the form of 3-D novelty reels, first introduced in 1924 and resumed in 1935 under the name of "Audioscopiks."

To understand the action of the anaglyph viewing glasses, look at red and blue printing or pictures, first through a red filter and then through a blue filter. Through a red filter the blue appears black and the red disappears entirely. Conversely, through a blue filter the red appears as black and the blue vanishes, or almost vanishes.

The most nearly perfect anaglyphic 3-D involves the use of two homologous black and white (uncolored) prints and two synchronized movie projectors. A cyan filter is placed over the lens of the left projector, and a red filter over that of the right projector. The projected picture is thus a composite of red and cyan images. Cyan is a strong greenish blue color, a combination of spectral green and spectral blue violet.

Single Film "Audioscopiks"

The process was handled in a simpler, though less perfect, manner in the "Audioscopik" reels. A single film was used, and this was shown in the usual way without any filter over the projector lens. On this film was printed the left eye image in red dye and the right eye image in cyan dye. The movie patron wore an analyser having a left eye cyan filter and a right eye red filter. However, a few gremlins, in the form of spectral and

transmission deficiencies of the cyan dye popped up to bedevil the process. Each eye could perceive just a trace of the image not intended for it. "Ghosting" is thus one of the defects of the single strip anaglyph process.

Another serious limitation of anaglyph 3-D is the impossibility of using the process for natural color photography.

When we come to the polarized light process we arrive at the end of all stereoscopic possibilities for motion pictures. Nevertheless, the potentials of this method are largely unexplored and are capable of materializing in many interesting forms.

The Polaroid Process

The present commercial polarized light 3-D projection process is exactly analogous to the experimental two-strip setup which gives the best anaglyph stereoscopy. But instead of colored filters over the lenses of the two synchronized projectors, we have polarizing filters. The polarizing axes of the two are set at right angles to each other and it is standard practice to have the axis of the left hand polarizer slanting 45 degrees to the right (as we face the screen) and that of the right hand polarizer 45 degrees to the left. The observer wears analysing viewers having corresponding filters. These enable him to see only the left image with the left eye and the right image with the right eye.

Polarized light demands a projection screen having a metallic reflecting surface, usually a tarnish-resistant alloy of aluminum in a form that gives maximum diffusion of the projected light throughout the auditorium. Regular white matte screens cannot be used because they depolarize the

light, undoing the work of the polarizers placed over the projector lenses.

It is a natural law that free metals reflect polarized light without changing it, while non-metals and chemical compounds depolarize it. Matte screens are surfaced with titanium oxide, zinc oxide and other pure-white chemical compounds.

The Aluminum Screen

Aluminum screens, even though they must be used for 3-D work, have several advantages and disadvantages. They are great light savers in long, narrow auditoriums because they throw most of the projected light forward. They reflect all colors equally well if kept clean, and so provide a perfect rendition of color films when high-intensity arcs are used.

On the debit side we find that aluminum screens do not tolerate wrinkles or creases. Even the smallest wrinkle or the most carefully made seam shows up like a sore thumb. No matter how expertly surfaced, most aluminum screens impart a noticeably streaky appearance to the picture. And the spectacular characteristics of this type of screen exaggerate and alter image contrasts to give a comparatively harsh, grainy picture.

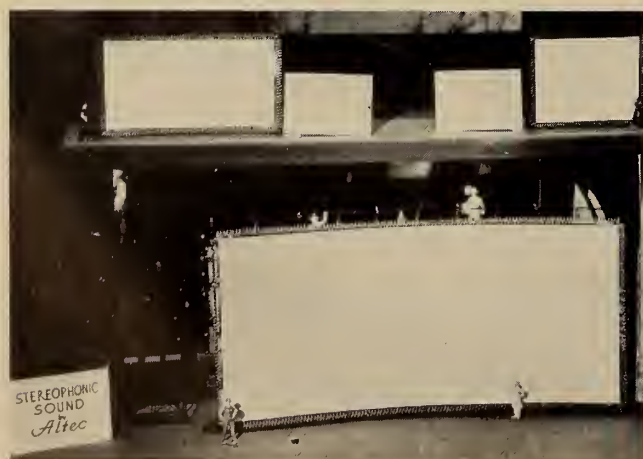
Even an aluminum screen may depolarize light to a slight extent if it be improperly coated, dirty or perforated. The aluminum coating must be thick enough to hide the cloth or plastic material of which the screen is made. If light is able to penetrate the aluminum paint, then it is certain that some depolarized light will be reflected into the audience.

The aluminum paint must contain only particles of pure, unoxidized metal as its pigment. If white paint be mixed with the aluminum, or if the metal particles are coated with oxide, there will be more or less depolarizing and ghosting. It is interesting to note that an aluminum screen washed with a linty cloth may be improved for regular projection but practically ruined for 3-D.

Sound perforations in an aluminum screen are the most common cause of ghost images. It happens that depolarization occurs whenever the light from the projectors strikes the aluminum surface a glancing blow. There are angles of incidence which must not be exceeded. A screen isn't very thick, but it's thick enough to

(Continued on page 22)

LOBBY DISPLAY SHOWS PROGRESS TO PICTURE PATRONS



Here's how the Shea Buffalo Theatre let its patrons in on the secrets of wide-screen and stereophonic sound. Displayed in the lobby is a scale model of the new 28 by 62-foot giant screen just installed in the theatre. This curved screen is the new Magniglow Astrolite produced by the Glow-meter Corp., of Buffalo, and the Radiant Manufacturing Co., of Chicago. The other screens are for purposes of comparison. Stereophonic sound is by Altec.

Announcing the Sensational New

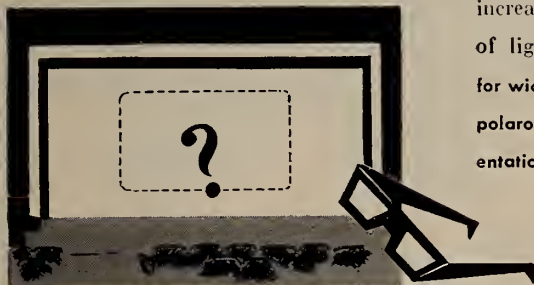
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PROJECTION ARC LAMP

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- The only lamp designed especially to project the tremendously increased volume of light required for wide-screen and polaroid 3-D presentation.



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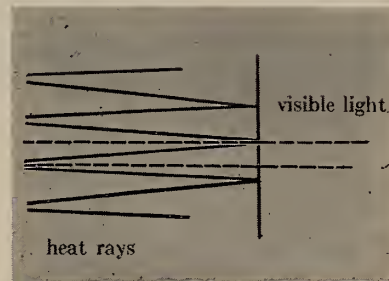
- Accommodating a 20-inch carbon, the "Super 135" is the only

Reflector Arc Lamp which can burn the 10mm "Hitex" Carbon at 120 amperes for a full hour as required by the new 3-D 5000-foot reels. Other lamps



which accommodate only 14-inch carbons can operate at this amperage no longer than 48 minutes without retrimming. The increased volume of light projected by the "Super 135" is especially important with 3-D because of the 60% light lost to the viewer, resulting from the use of polaroid filters. The "Super 135" furthermore maintains a screen light that, in intensity and color value, is constant and identical to that of the associated lamp which is burning simultaneously.

- The new **Infra-Ban Beam-Cooler Unit**, positioned in the path of the light beam, makes unnecessary any troublesome cooling contraptions in the lamphouse such as water coolers, etc. The Infra-Ban unit per-



mits the free passage of the visible light rays while diverting the heat rays away from the aperture and back into the lamphouse from which heat is rapidly withdrawn by a mechanically induced air flow out through the stack. Thus, Strong has made possible a tremendous increase in usable light without a corresponding increase in heat at the aperture.

- The position of the positive arc crater at the exact focal point of the reflector is automatically maintained, without manual adjustment by means of Strong's exclusive Lightronic crater-positioning system. Each carbon is advanced by a separate motor, the speed of which is governed by the Bi-Metal Lightronic Tube. A stream of air directed just above the arc stabilizes its burning and prevents the deposit of soot on the reflector.

- Unit construction, whereby the various components are instantly removable, permits ready adaptation to any future developments in carbons or burning techniques.

- For further information on projection arc lighting of 3-D or wide-screen pictures by any system, address Department 3-D.

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Please send details on Strong "Super 135" Projection Arc Lamps.

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Motiograph Series A Systems reproduce 3-track sound recorded on a separate sound film—the recording method used by most studios.

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MORE THAN 71 GREAT PICTURES FROM SUCH STUDIOS AS COLUMBIA, PARAMOUNT, UNIVERSAL AND WARNER BROTHERS WILL REQUIRE SERIES A SYSTEMS WITH A SEPARATE MAGNETIC SOUND REPRODUCER

These pictures include Warner Brothers:

"A Star is Born" starring Judy Garland
 "Blowing Wild"
 "Mr. Roberts"
 "Lucky Me" starring Doris Day
 "Island In The Sky"
 "East of Eden"
 "Rear Guard" starring Guy Madison
 "Helen of Troy"
 "Calamity Jane"

Of 12 forthcoming Paramount stereophonic

sound productions are included:

"The Caddy" with Martin and Lewis
 "The War of the Worlds"
 "Cease Fire"
 "Those Redheads From Seattle"
 "Flight to Tangier"

A number of Universal's forthcoming releases will include stereophonic sound recording. Among the major productions are:

"Thunder Bay"
 "The Man From the Alamo"

"Abbott and Costello Meet Dr. Jekyll and Mr. Hyde"

"Wings of The Hawk"
 "The Stand at Apache River"
 "The Golden Blade"
 "The All American"
 "East of Sumatra"
 "The Glass Web"
 "Back to God's Country"
 "The Veils of Badgad"
 "Tumbleweed"
 "Walking My Baby Back Home"

★ ★ ★ ★ ★

Such great Fox productions as "The Robe", generally publicized as potentially the greatest boxoffice hit of all time, will require Series B Systems for sound reproduction. Theatre owners wishing to profit from the 71 pictures to be released with stereophonic sound on a separate sound film will purchase Series A Systems now.

Those who buy now will not be buying potentially obso-

lete equipment as Series A Systems can be quickly and economically converted to reproduce stereophonic recordings on the picture film should this method become the standard of the industry.

Motiograph Stereophonic Sound Systems, which include Altec-Lansing celebrated "Voice of The Theatre" loud-speaker systems, are priced at \$4,925.00 upward.

NOW IS THE TIME TO INSTALL A WIDE SCREEN AND STEREOPHONIC SOUND

If you haven't placed your order, we suggest that you do so without further delay so that you can play as early as possible the above big

money-making pictures now being released. You will, in almost no time, have them paid for many times over from increased business.

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The Rebirth of a Theatre

How one Los Angeles projectionist saved his theatre by doing a thorough house-cleaning of the projection room and installing new equipment and a new screen.

By FRANK McBRYDE

Member of IA Local 150, Los Angeles, Calif.

THIS is the story of the rebirth of Los Angeles' Picwood Theatre, a 1,500-seat house that was set to shutter because it couldn't handle the new techniques of 1953. It is the story of how the Picwood, 10,872 Pico Boulevard, was brought back to life by Hal Goldstein, chief projectionist.

Built as a luxury neighborhood house in 1949, the theatre was found by the major studios to be ideal for sneak previews. On this basis it became extremely popular — until the advent of the new mediums, 3-D, wide-screen and stereophonic sound, left it high and dry. With obsolete equipment in the projection room, the Picwood couldn't play anything but standard 35-mm. The studios took their preview business elsewhere, and the Picwood patrons followed.

Goldstein talked things over with the management and was given *carte blanche*. His first project was a thorough house-cleaning of the projection room as a starter in a rehabilitation project. Then came a new screen and wiring for stereophonic sound. Today business is booming

again at the Picwood. It is again one of the best equipped theatres on the West Coast — and it's again the favorite preview house for the major studios.

All Equipment Out

The first step in the modernization process was the removal of all equipment from the projection room, with the exception of the Model 242 RCA projector and two RCA sound heads.

New equipment installed on Goldstein's advice consisted of the following:

- Four new Simplex heavy duty bases.

- Four new Peerless Magnarc lamps.

- Huff Hydro Carbon Coolers.

- Four new X-L heads with selsyn interlocking motors.

- Two new Simplex sound heads with magnetic reproducers.

- Four 5,000-foot magazines.

- Six Atlas pre-amplifiers (two for each head).

- One stereophonic rack with four Atlas 50-watt amplifiers, plus one



Projectionist Frank McBryde is shown at the Picwood's interlocking panel. Shown are the optical and stereophonic faders.

spare amplifier.

- One interlocking panel for the projectors.

- One stereophonic fader with monitor.

- One 24- by 42-foot Daylight screen.

- Three Altec Lansing speakers and twelve effect speakers.

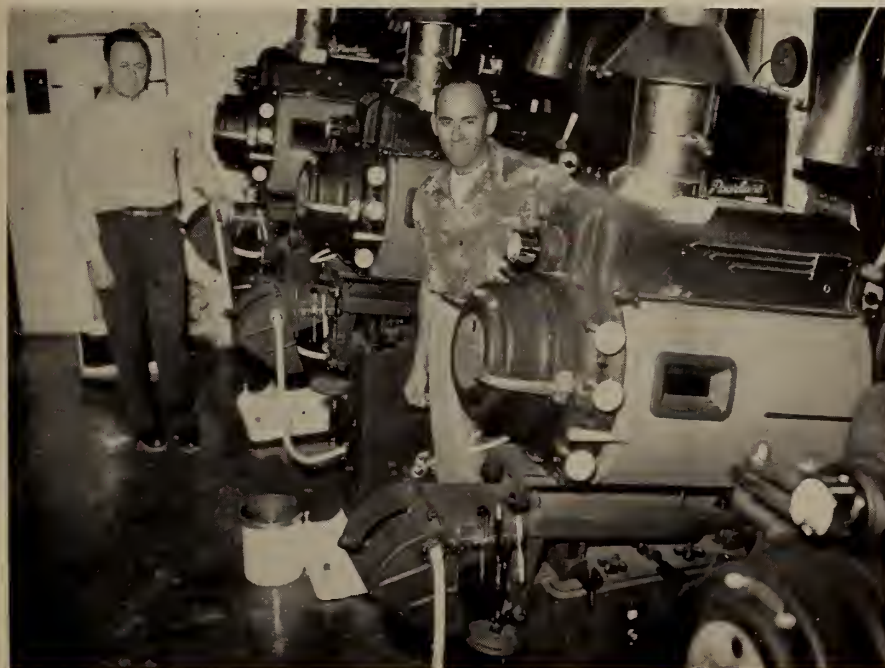
- Two McColpin Christie 90-amp, 3-phase rectifiers.

Space at Premium

Since the projection room at the Picwood is only 24 by 12 feet, every inch of space was of extreme importance. Hence, the rectifiers and the rheostats were placed in a room beneath the projection room. The 80-160 amp generator, part of the old equipment, remained in its former location outside the auditorium.

The interlocking panel was constructed by Ed Traut, a studio electrician. The panel is a little over three feet high and is almost two feet wide, and its color code of red for left and blue for right was carried throughout the entire installation. The panel has three rows of rotary micro switches, four to a row, with 228 micro switches ganged behind the twelve rotary switches. Each switch has three positions, "red control," "blue control," and "off." The top row of four switches are for each machine, switches on the second row are the dowsers selectors, while the four bot-

(Continued on page 29)



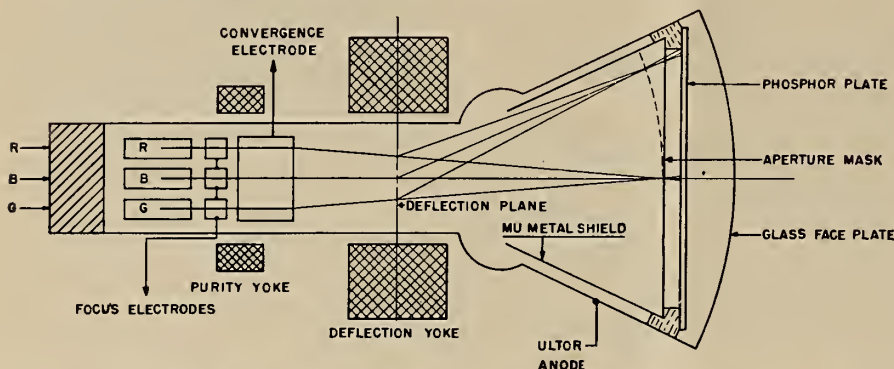
This is the refurbished projection room of Los Angeles' Picwood Theatre. On the left is Dean Griffin, projectionist, and on the right is chief projectionist Hal Goldstein.

COLOR TV . . . and How it Works!

A SYSTEM of "compatible" color television using the Radio Corporation of America tri-color tube has been tentatively approved by the Federal Communications Commission and final approval is expected very shortly. This article answers some of the questions projectionists

By JAMES MORRIS

"color premieres" of its major programs on the 28th of this month. It is also planned to equip the 300-seat Bijou Theatre in New York City with movie-size color Tv for public demonstrations until mass production of receivers is under way.



Above is a simplified diagram showing the principle of a present RCA tri-color tube. Electron beams representing the three primary colors pass from the focus electrodes in the neck of the tube to the color sensitive phosphors on the inside surface of the tube's face. The beams are positioned and deflected to the proper spot on the picture surface by the electro-magnetic purity yoke and deflection yoke and the electrodes shown in the diagram.

may have about color Tv. How much will it strengthen Tv in the competitive struggle between the film theatre and the living room Tv set? Also, how does it work?

The color Tv system expected to meet the FCC approval this month was proposed by the National Television System Committee, an industry-wide group including manufacturers and broadcasters. It was also proposed to the FCC in a separate petition by RCA and the National Broadcasting Co.

RCA is a pioneer in the color television field and probably the most important force in its development. When the FCC gives final approval to the proposed standards, RCA and NBC, working together, will do the following:

1. Expedite production of color receivers, tri-color tubes and broadcasting and studio equipment.
2. Commence broadcasting compatible color Tv programs which will be offered to commercial sponsors and to stations throughout the country.

Demonstrations Planned

If FCC approval comes in time, NBC will begin to experiment with

NBC's Dolores Gray appears before the camera in a field test of the RCA color system.

The big virtues of the RCA and NTSC system in the eyes of the Tv industry are its "compatibility" and the fact that it is all-electronic. When stations broadcast using the RCA compatible color Tv system, nothing whatever need be done by the owners of Tv sets now in homes if they desire

to receive color programs in black and white. The system is all-electronic in the sense that it reproduces color through the tri-color tube without the need for disks, drums or motors as required by another but non-compatible system developed a few years ago by the Columbia Broadcasting System. CBS has announced that it will retire in favor of the compatible method.

RCA and NBC's plan of action leaves the impression that color will almost immediately become an important force in Tv, but that is not the case. Although its eventual predominance over black-and-white Tv is probably beyond question, there are important stumbling blocks that will slow down the expansion of color Tv. One is the price of sets. They are expected to cost from \$800 to \$1,000 with a 14-inch tube when first marketed. Another factor is the already high cost of producing Tv programs. Almost doubled expenditures on the part of sponsors for color shows will be difficult to bear.

Set Supply Limited

Limited production of color receivers may start before the end of 1953 if FCC approval comes soon enough, but according to present estimates it will be 1955 before heavy volume production is under way and prices of



sets can be reduced. Many people in the film industry feel that the real enemy of the exhibition business so far as Tv is concerned is not color, but subscription Tv, the box office in the home, which could exploit high-quality first-run movies. This idea also soon will be before the FCC.

Before explaining the RCA Color television system, it may be useful to review briefly how black-and-white Tv works. Pictures are produced by means of an electronic scanning process in which a stream of electrons in the camera tube sweeps across, or scans, the image of the scene being televised.

Dots Glow in Color

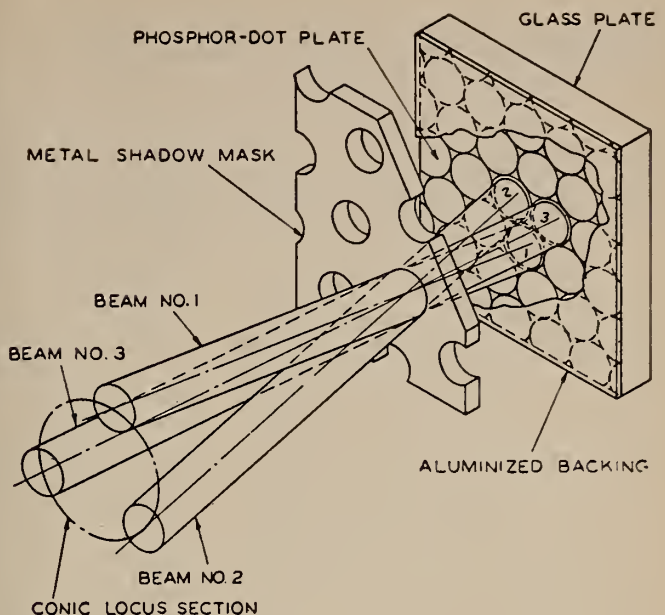
The brightness of any given part of the scene at the instant it is being scanned is translated into electrical currents. These currents are transmitted through space as radio waves. As the radio waves reach the receiver, an electron beam, sweeping back and forth across the luminescent phosphors on the inside of the picture tube, converts the incoming waves to spots of light varying in intensity from zero (black) to maximum (white).

Colors are reproduced in the RCA tri-color tube in a manner quite similar to that used in black-and-white Tv — also by the use of phosphors on the inside face of the tube. In black-and-white Tv the phosphors glow only in white, but in color the electron beams are directed to small phosphor dots, each of which, when hit by an electron beam, glow in one of three primary colors. Red, green and blue are generally used in Tv. Thus, when the color-sensitive phosphors are exposed to electron beams, the primary colors blend, and it is possible to reproduce the original scene.

How Camera Works

At the camera end, the RCA color system now works as follows: Light coming from the scene being televised passes into the color camera and then through a series of mirrors to three separate camera tubes, one for each primary color. These mirrors have the property of "splitting" the light from the scene into three components — blue, green and red. Each mirror reflects one of the components of the light, while passing the other components, thus separating the light into three colors. A single-tube camera is under development.

This diagram shows how the electron beams representing the three primary colors are directed at a particular phosphor dot which will reproduce a specific color. The beams converge and pass through small holes in a metal shadow mask, and then diverge again for a short distance until reaching the proper phosphor dot. The portion of the tube represented in this drawing is a small section of the shadow mask and the face of the tube.



Another tri-color tube, the Paramount-Lawrence tube, is under development at Chromatic Television Labs. in San Francisco. This is claimed to be the simplest tri-color tube to manufacture, but it is not yet out of the development stage.

When color television broadcasts begin in studios throughout the coun-

try many different groups within the IA will be involved in the more complicated studio operation that color requires. These include not only projectionists and Tv cameramen, but set designers, carpenters, electricians, property men, film editors, cartoonists, makeup men, hair stylists, and wardrobe personnel.

Chicago Trade Show to Crack Records

THEATRE equipment manufacturers, anxious to display and demonstrate the varied new equipment necessary for showing motion pictures made in the 3-D and wide-screen processes, have completely bought out all available space at the annual trade show of the Theatre Equipment and Supply Manufacturers Association to be held October 31 to November 5 at the Conrad Hilton Hotel in Chicago.

The event will be by far the largest display of theatre equipment ever presented to the industry, according to Roy Boomer, secretary of TESMA. Participating will be two other groups. The Theatre Owners of America and the Theatre Equipment Dealers' Association, both of which will be heavily represented.

The show is open to everyone. It is not necessary to belong to any organization to attend. Manufacturers plan to have their top engineers at the show to answer questions. Other features of the show include an open forum on present-day motion picture problems and a number of social functions. Twentieth Century-Fox will stage a demonstration of CinemaScope. Hotel accommodations may be secured by writing direct to the Conrad Hilton Hotel.

Among the equipment manufacturers to be represented at the show are: The Altec Lansing Corp.; C. S. Ashcraft Mfg. Co., Inc.; Automatic Devices Co.; The Ballantyne Co.; Bausch & Lomb Optical Co.; Century Projector Corp.; Continental Electric Co.; Da-Lite Screen Co.; DAWO Corp.; De Vry Corp.; Diecast Aluminum Speakers, Inc.; Drive-in Theatre Mfg. Co.; GoldE Mfg. Co.; Gordos Corp.; Hewitt-Robins, Inc.; Hal I. Huff Mfg. Co.; Imperial Electric Co.

Kollmorgen Optical Corp.; La Vezzi Machine Works; Lorraine Carbons, Inc.; Motiograph, Inc.; National Carbon Co.; National Theatre Supply; Neumade Products Corp.; Norpat Sales, Inc.; Polaroid Corp.; Radiant Mfg. Corp.; Radio Corp. of America; Raytone Screen Corp.; J. E. Robin, Inc.; Society of Motion Picture and Television Engineers; The Strong Electric Corp.; the Superior Electric Co., and the Wenzel Projector Co.

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Walter L. Craig, *pres.*; Clarence Apgar, *1st vice-pres.*; Walter J. Kovacs, *2nd vice-pres.*; Frank J. Eano, *rec.-sec.*; Warren R. Wilson, *sec.-treas.*; E. Clyde Adler, *bus. rep.*

How to Check for – and Get – Maximum L

WIDE-SCREEN and stereo 3-D motion pictures have focused attention on the need for maximum illumination from projection equipment. During the past several years considerable information on the subject of screen light has been published by the *International Projectionist*, the *Journal of The Society of Motion Picture and Television Engineers*, and by other publications. The Motion Picture Research Council has now brought this material up to date and assembled it into the following article to aid projectionists in determining the following:

- (1) Whether your screen is receiving enough light.
- (2) If not, what is causing the trouble.

There are two general reasons why your screen may not be receiving sufficient light. First, one or more parts of your equipment may not be capable of doing the job they should be doing. (For example, a lens which is too slow.) Second, one or more parts of your equipment, even though adequate, may not be properly adjusted. (For example, the optical alignment may be off.)

By carefully working out the following instructions step by step, an illumination check may be made with

a light meter in about 30 minutes. If light output is found to be below the capacity of your equipment, then a thorough check, also described in this article, should be made.

Table Gives Data

Fourteen different combinations of carbons are listed in the table reproduced on this page. The average operating amps and arc volts are given for each combination. The first four are used with condenser lenses whose F numbers are shown. The other horizontal columns in the table correspond to different speed projection lenses, coated and uncoated, and with and without adjustment for maximum light. The screen lumen figure is for systems with no shutter, film or filters of any kind, and assumes a side-to-center light distribution as shown.

To tell how many screen lumens your system can furnish when in good operating condition and adjusted for top efficiency, locate the particular carbon combination you are using, look down the column to the horizontal row which corresponds to the type of your projection lens and read the figure.

The Research Council and the SMPTE now also have available two forms which enable the projectionist to list conveniently the ratings of his

equipment and estimate the total amount of screen lumens produced by each projector. A sample of one of these forms, with figures from an imaginary projection system already typed in, is reproduced on the next page. It contains two screen diagrams and also shows calculations for using these readings to get a screen lumen figure for each projector. If you follow this same procedure and find the number of screen lumens produced by your projectors, you can check their performance against the table and determine how efficient they are.

How to Use Table

As an example of how to use the table, and the calculations of the form, let us consider a projector which uses 8-mm positive and 7-mm negative carbons. This combination is found in two columns, 11 and 12, of the table. If the side-to-center ratio for the projectors, as determined by the light meter readings, is greater than 65%, we can assume the adjustment is not for maximum light. You can see from the table that the available lumen figure for such a projector with a 5-inch F/2.0 coated lens is 10,300 lumens with 60 amps, and 13,000 lumens with 70 amps.

If the amperage of this particular arc lamp were 64 amps, its potential

TOTAL SCREEN ILLUMINATION (LUMENS) AVAILABLE WITH VARIOUS

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
Carbon Trim	Positive	Nat. H.I. 13.6mm x 22"	Nat. H.I. 13.6mm x 22"	Nat.Super H.I. 13.6mm x 22" "Hitex"	Nat.Super H.I. 13.6mm x 22" "Hitex"	Nat.H.I. 9mm x 20"	Nat. H.I. 9mm x 20"	Nat. H. I. 10mm x 20"
	Negative	Orotip 7/16" x 9"	Orotip 1/2" x 9"	Heavy Duty Orotip 1/2" x 9"	Heavy Duty Orotip 1/2" x 9"	Orotip 5/16" x 9"	Orotip 5/16" x 9"	Orotip 11/32" x 9"
	Arc Amps	125	160	170	180	75	85	100
	Arc Volts	68	77	70	74	52	58	60
Lamp Optical System		CondenserLens f2.0	CondenserLens f2.0	CondenserLens f2.0	CondenserLens f2.0	Mirror 16-16½"D f1.9	Mirror 16-16½"D f1.9	Mirror 16-16½"D f1.9
f/No. of Condenser Lens or Mirror		5" E.F. f/2.0 Coated Projection Lens						
Screen Light Distribution		5" E.F. f/2.0 Coated Projection Lens						
Side-to-Center		80%	80%	80%	80%	80%	80%	80%
Total Screen Lumens		11,500	16,500	17,500	19,300	12,500	14,500	15,500
Screen Light Distribution		5" E.F. f/2.0 Coated Projection Lens - Maximum Light						
Side-to-Center		60%	60%	60%	60%	60%	55%	60%
Total Screen Lumens		14,500	20,500	20,700	24,800	16,000	19,500	20,000
Screen Light Distribution		5.5" E.F. f/2.5 Uncoated Projection Lens						
Side-to-Center		--	--	--	--	--	--	--
Total Screen Lumens		--	--	--	--	--	--	--
Screen Light Distribution		5.5" E.F. f/2.5 Uncoated Projection Lens - Maximum Light						
Side-to-Center		--	--	--	--	--	--	--
Total Screen Lumens		--	--	--	--	--	--	--

at the Screen

lumen rating will be found to be 10,300 added to 4/10ths of 2,700, which is the difference between 13,000 and 10,300. The resulting total is 11,380 lumens. This sort of calculation, called "interpolation," is done as follows:

Let us again take the example where the lumen figure is 10,300 when running at 60 amps, and 13,000 when running at 70 amps. This is shown in the table. But what if the amperage is neither 60 nor 70, but halfway between? Obviously the lumen figure sought will be somewhere in between 10,300 and 13,000. The difference between 13,000 and 10,300 is 2,700, and half of this is 1,350. Adding 1,350 to 10,300 gives 11,650 screen lumens, corresponding to 65 amps. It is easy to see that this calculation can be worked out by percentages for any amp rating between 60 and 70.

In using the table, you may possibly find that the projection lenses listed do not match those of your machines. You might, for instance, have coated F/2.5 lenses or even uncoated F/2.0 lenses. An uncoated lens transmits about 20 percent less light than a coated lens and *vice versa*, so you can still get the correct potential lumen figure for your machines by increasing or decreasing the figure on

This article, assembled by the Motion Picture Research Council, provides a step-by-step procedure for testing your projection optical system and adjusting it for maximum light.

the table by 20 percent as the situation requires. However, you should have coated lenses.

The actual lumen figure for your projector, which you work out by means of the calculations on the Research Council form accompanying this story, should be at least 80% of the top lumen figure for the same type of equipment as shown in the table. If it is less than 80%, you should continue with the equipment check described here. Even if your figure is greater than 80%, you may still wish to continue the check in order to get all the light you possibly can. It is possible to make gains both by alignment and focus corrections. Whether or not top light output can be obtained depends on how carefully the following instructions are carried out.

Optical Train Check

Many projectors now in use were manufactured before F/1.9 and F/2.0 objective lenses were available. Therefore, the aperture heat shields, parts of the rear shutter and other obstructions may block the passage of light that would ordinarily be transmitted

by a faster lens. A template for checking the optical train is available from lamp suppliers for use with F/2.0 lamp optics. To use it:

(a) Insert the template through the cone of the lamphouse in a vertical plane. It should pass through all openings until the edges come in contact with the top and bottom of the aperture plate. (b) Insert the template on a horizontal plane. The edges should contact the sides of the aperture plate.

If the template will not pass this far into the optical train opening the obstruction will be evident and should be filed out, or the part should be replaced with one that will admit the template. In some cases the manufacturer may supply a kit for this purpose.

Another practical method of checking the optical train opening to be sure it will pass the cone of light from the mirror is as follows:

(a) Run a piece of string from the top of the mirror through the aperture to the top of the aperture plate opening at the film plane. If anything interferes with the straight line of the string, then it must be removed in order that the top of the film frame will receive light from the top of the mirror. (b) Duplicate this procedure from the bottom of the mirror to the bottom of the film-plane position, and also from each side.

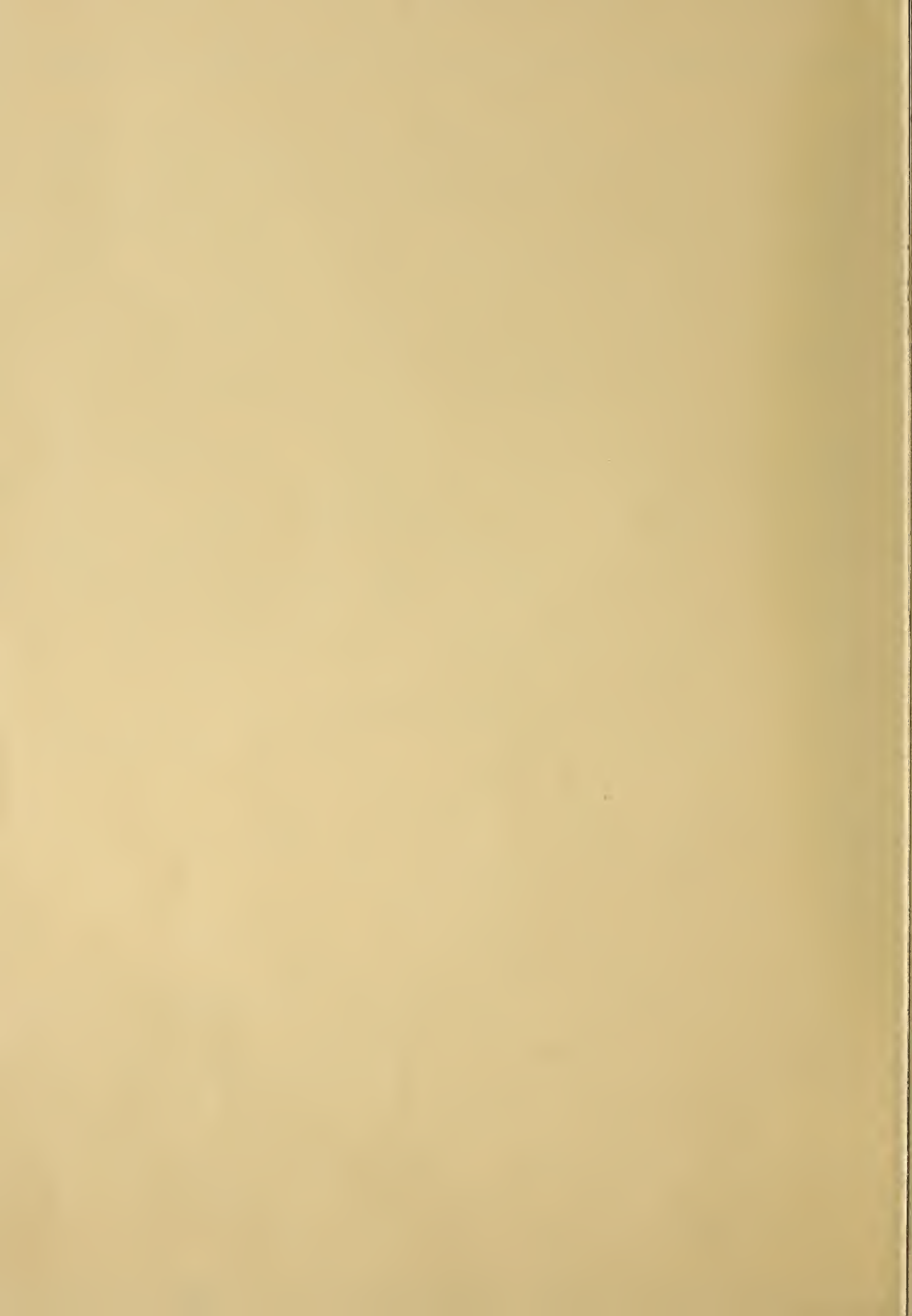
Shutter Transmission Check

For the purpose of screen light checking, a shutter transmission of 50% may be assumed as a good average. If your check reveals less than

The lumen figure given in this chart is for a system without shutters and with optimum optical alignment. With a shutter and other light losses, the output from the projector probably will not be more than 40 percent of the figure given on the chart.

CHARTS IN DIFFERENT PROJECTION SYSTEMS

	(9)	(10)	(11)	(12)	(13)	(14)
"Suprex"	"Suprex"	"Suprex"	"Suprex"	"Suprex"	"Suprex"	"Suprex"
7x12" or 14"	7x12" or 14"	8x12" or 14"	8x12" or 14"	9mm x 14"	9mm x 14"	9mm x 14"
(New type)	(New type)					
Orotip-C	Orotip-C	Orotip-C	Orotip-C	Orotip-C	Orotip-C	Orotip-C
6mm x 9"	6mm x 9"	7mm x 9"	7mm x 9"	8mm x 9"	8mm x 9"	8mm x 9"
42	50	60	70	65	75	
36	40	36	40	41	45	
"8"D Mirror 14" D	Mirror 14" D	Mirror 14" D	Mirror 14" D	Mirror 14" D	Mirror 14" D	Mirror 14" D
f2.3	f2.3	f2.3	f2.3	f2.3	f2.3	f2.3
	80%	80%	80%	80%	80%	80%
	7,250	9,200	10,300	13,000	12,300	13,800
	60%	60%	65%	65%	70%	70%
	8,650	11,700	11,000	14,000	13,000	15,000
	80%	80%	80%	80%	—	—
	5,400	6,850	7,600	9,600	—	—
	60%	60%	65%	65%	—	—
	6,350	8,400	8,200	10,600	—	—



How to Check for — and Get — Maximum Light at the Screen

WHIDE-SCREEN and stereo 3-D motion pictures have focused attention on the need for maximum illumination from projection equipment. During the past several years considerable information on the subject of screen light has been published by the *International Projectionist*, the *Journal of The Society of Motion Picture and Television Engineers*, and by other publications. The Motion Picture Research Council has now brought this material up to date and assembled it into the following article to aid projectionists in determining the following:

(1) Whether your screen is receiving enough light.

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By carefully working out the following instructions step by step, an illumination check may be made with

a light meter in about 30 minutes. If light output is found to be below the capacity of your equipment, then a thorough check, also described in this article, should be made.

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Fourteen different combinations of carbons are listed in the table reproduced on this page. The average operating amps and arc volts are given for each combination. The first four are used with condenser lenses whose F numbers are shown. The other horizontal columns in the table correspond to different speed projection lenses, coated and uncoated, and with and without adjustment for maximum light. The screen lumen figure is for systems with no shutter, film or filters of any kind, and assumes a side-to-center light distribution as shown.

To tell how many screen lumens your system can furnish when in good operating condition and adjusted for top efficiency, locate the particular carbon combination you are using, look down the column to the horizontal row which corresponds to the type of your projection lens and read the figure.

The Research Council and the SMPTE now also have available two forms which enable the projectionist to list conveniently the ratings of his

equipment and estimate the total amount of screen lumens produced by each projector. A sample of one of these forms, with figures from an imaginary projection system already typed in, is reproduced on the next page. It contains two screen diagrams and also shows calculations for using these readings to get a screen lumen figure for each projector. If you follow this same procedure and find the number of screen lumens produced by your projectors, you can check their performance against the table and determine how efficient they are.

How to Use Table

As an example of how to use the table, and the calculations of the form, let us consider a projector which uses 3-mm positive and 7-mm negative carbons. This combination is found in two columns, 11 and 12, of the table. If the side-to-center ratio for the projectors, as determined by the light meter readings, is greater than 65%, we can assume the adjustment is not for maximum light. You can see from the table that the available lumen figure for such a projector with a 5-inch F/2.0 coated lens is 10,300 lumens with 60 amps, and 13,000 lumens with 70 amps.

If the amperage of this particular arc lamp were 64 amps, its potential

lumen rating will be found to be 10,300 added to 4/10ths of 2,700, which is the difference between 13,000 and 10,300. The resulting total is 11,380 lumens. This sort of calculation, called "interpolation," is done as follows:

Let us again take the example where the lumen figure is 10,300 when running at 60 amps, and 13,000 when running at 70 amps. This is shown in the table. But what if the amperage is neither 60 nor 70, but halfway between? Obviously the lumen figure sought will be somewhere in between 10,300 and 13,000. The difference between 13,000 and 10,300 is 2,700, and half of this is 1,350. Adding 1,350 to 10,300 gives 11,650 screen lumens, corresponding to 65 amps. It is easy to see that this calculation can be worked out by percentages for any amp rating between 60 and 70.

In using the table, you may possibly find that the projection lenses listed do not match those of your machines. You might, for instance, have coated F/2.5 lenses or even uncoated F/2.0 lenses. An uncoated lens transmits about 20 percent less light than a coated lens and *vice versa*, so you can still get the correct potential lumen figure for your machines by increasing or decreasing the figure on

the table by 20 percent as the situation requires. However, you should have coated lenses.

The actual lumen figure for your projector, which you work out by means of the calculations on the Research Council form accompanying this story, should be at least 30% of the top lumen figure for the same type of equipment as shown in the table. If it is less than 30%, you should continue with the equipment check described here. Even if your figure is greater than 30%, you may still wish to continue the check in order to get all the light you possibly can. It is possible to make gains both by alignment and focus corrections. Whether or not top light output can be obtained depends on how carefully the following instructions are carried out.

Optical Train Check

Many projectors now in use were manufactured before F 1.9 and F 2.0 objective lenses were available. Therefore, the aperture heat shields, parts of the rear shutter and other obstructions may block the passage of light that would ordinarily be transmitted

by a faster lens. A template for checking the optical train is available from lamp suppliers for use with F 2.0 lamp optics. To use it:

(a) Insert the template through the cone of the lamphouse in a vertical plane. It should pass through all openings until the edges come in contact with the top and bottom of the aperture plate. (b) Insert the template on a horizontal plane. The edges should contact the sides of the aperture plate.

If the template will not pass this far into the optical train opening the obstruction will be evident and should be filed out, or the part should be replaced with one that will admit the template. In some cases the manufacturer may supply a kit for this purpose.

Another practical method of checking the optical train opening to be sure it will pass the cone of light from the mirror is as follows:

(a) Run a piece of string from the top of the mirror through the aperture to the top of the aperture plate opening at the film plane. If anything interferes with the straight line of the string, then it must be removed in order that the top of the film frame will receive light from the top of the mirror. (b) Duplicate this procedure from the bottom of the mirror to the bottom of the film-plane position, and also from each side.

Shutter Transmission Check

For the purpose of screen light checking, a shutter transmission of 50% may be assumed as a good average. If your check reveals less than

The lumen figure given in this chart is for a system without shutters and with optimum optical alignment. With a shutter and other light losses, the output from the projector probably will not be more than 40 percent of the figure given on the chart.

TOTAL SCREEN ILLUMINATION (LUMENS) AVAILABLE WITH VARIOUS LENSES IN DIFFERENT PROJECTION SYSTEMS

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		Not. H.I. 13.6mm x 22"	Nat. H.I. 13.6mm x 22"	Not. Super H.I. 13.6mm x 22" "Hitex"	Nat. Super H.I. 13.6mm x 22" "Hitex"	Nat. H.I. 9mm x 20"	Nat. H.I. 9mm x 20"	Nat. H.I. 10mm x 20"		"Suprex" 7x12" or 11" (New type)	"Suprex" 7x12" or 11" (New type)	"Suprex" 8x12" or 11"	"Suprex" 8x12" or 11"	"Suprex" 9mm x 11"	"Suprex" 9mm x 11"
Carbon Tri- Positive															
	Negative	Orotip 7/16" x 9"	Orotip 1/2" x 9"	Heavy Duty Orotip 1/2" x 9"	Heavy Duty Orotip 1/2" x 9"	Orotip 5/16" x 9"	Orotip 5/16" x 9"	Orotip 11/32" x 9"		Orotip-C 6mm x 9"	Orotip-C 6mm x 9"	Orotip-C 7mm x 9"	Orotip-C 7mm x 9"	Orotip-C 8mm x 9"	Orotip-C 8mm x 9"
	Arc Amps	125	160	170	180	75	85	100		62	50	60	70	65	75
	Arc Volts	68	77	70	74	52	58	66		36	40	36	40	42	45
Lamp Optical System		Condenser Lens F2.0	Condenser Lens F2.0	Condenser Lens F2.0	Condenser Lens F2.0	Mirror 16-16 1/2" D F1.9	Mirror 16-16 1/2" D F1.9	Mirror 16-16 1/2" D F1.9		Mirror 11" D F2.3	Mirror 11" D F2.3	Mirror 11" D F2.3	Mirror 11" D F2.3	Mirror 11" D F2.3	Mirror 11" D F2.3
5" E.F. F/2.0 Coated Projection Lens															
Screen Light Distribution	Side-to-Center	80%	80%	80%	80%	80%	80%	80%		80%	80%	80%	80%	80%	80%
Total Screen Lumens		11,500	16,500	17,500	19,300	12,500	14,500	15,900		7,250	9,200	10,300	13,000	12,300	13,800
5" E.F. F/2.0 Coated Projection Lens - Maximum Light															
Screen Light Distribution	Side-to-Center	60%	60%	60%	60%	60%	60%	60%		60%	60%	65%	65%	70%	70%
Total Screen Lumens		14,500	20,500	20,700	24,800	16,000	19,500	20,000		8,650	11,700	11,000	14,000	13,000	15,000
5.5" E.F. F/2.5 Uncoated Projection Lens															
Screen Light Distribution	Side-to-Center	—	—	—	—	—	—	—		80%	80%	80%	80%	—	—
Total Screen Lumens		—	—	—	—	—	—	—		5,400	6,850	7,600	9,600	—	—
5.5" E.F. F/2.5 Uncoated Projection Lens - Maximum Light															
Screen Light Distribution	Side-to-Center	—	—	—	—	—	—	—		60%	60%	65%	65%	—	—
Total Screen Lumens		—	—	—	—	—	—	—		6,350	8,100	8,200	10,600	—	—

50% shutter transmission, it may be because of adjustable shutter blades or a number of other reasons. The supply house service department should be consulted in order to determine the specific reason.

With one projectionist at the screen to read the light meter, and another to operate the projector, make the shutter-transmission check as follows:

(a) open the shutter; (b) close the dowser; (c) strike the arc and make the setting as if you were going to operate the projector, and (d) when the person at the screen is ready with the light meter, flash the light onto the screen by opening the fire shutter by hand and operating the dowser control.

Warning: Only allow light to pass through the objective lens for the shortest period in which a reading may be taken, otherwise damage to the lens may result. Readings of this type should never be taken through a Polaroid filter.

Then start the projector and take the same reading. The ratio of the two readings will reveal the shutter transmission. For example, if the "flashed" reading without the machine running, is 29 foot-candles, and the reading with the machine running is 13 foot-candles, the shutter transmission is $13/29 \times 100 = 45\%$. This

is too low. The shutter is cutting light and should be adjusted.

Alignment and Focus

In a high-intensity arc lamp, all of the brightest portion of the gas ball cannot be focused on the film plane unless the crater of the positive carbon is exactly on the optical axis of the mirror or condenser, and the axis is then aligned to pass exactly through the center of the aperture. With misalignment, the plane in focus will include either shell light — which is of lower order of intensity, and more yellow — or arc stream light, which is also of lower intensity and more blue.

Also, the image of the gas ball must fall precisely on the film plane if a maximum amount of light is to pass through the rest of the optical system. Finally, the optical axis of the projection lens must be exactly along the axis of the lamp-mirror-aperture system.

It is thus evident that unless crater, mirror, aperture and lens are all in rifle-barrel alignment along a common axis, it will be impossible to bring them into line with conventional controls. Why? Because these controls can only change working distances along the axis or tilt the mirror in various ways. This fact often creates the belief that a given mirror is too inaccurate for suitable opera-

This is a filled-in sample form as worked out by the Motion Picture Research Council. The accompanying article gives detailed instructions on how to check screen light.

tion, but before discarding the mirror, you should test it under conditions of correct optical alignment. If the other lamp seems satisfactory, the suspected mirror may be tested there.

Basic Alignment

Not only must the mechanism be so aligned as to hold the carbon crater with the gas ball in its proper position with respect to the mirror, but operation must be maintained so that the crater remains in that position during the burning of the trim. If, for example, a short grip on the positive carbon causes the crater to raise out of its proper position, then discoloration and loss of light will result, just as though the entire mechanism were out of line. This is also true of improperly designed carbon savers.

A systematic procedure for optical train alignment and adjustment follows:

1. Align the lamphouse and burner mechanism with suitable alignment tools, according to the instructions accompanying the tools. Alignment kits for most projectors may be obtained from projector manufacturers. On some of the older type bases ingenuity may be required to determine means for shimming and adjusting, but proper alignment is necessary for maximum brightness, a good field and correct color of screen light.

2. Check the numbers on the back of the mirror against the manufacturer's specifications to determine the proper working distance, which is measured from the inside edge of the mirror centerhole to the film plane. It is not safe to determine the working distance from the mirror diameter alone; as a matter of fact, one lamp manufacturer provides mirrors of three different working distances for the same lamp. Next, move the lamphouse on the base to within plus or minus 1/2 inch of the prescribed distance.

3. Set the arc at the manufacturer's recommended arc-to-mirror distance.

4. Strike the arc, (shutter running, no film in gate) and by means of the lateral and vertical mirror ad-

(Continued on page 30)

What's Your Problem?

If You've Got a Question, Send it in . . . IP
Will Try To Answer it — and Pay You Too!

WHAT'S your problem? IP is all ears — and we're not only ready, willing and anxious to help you out with the answer, but we'll pay you, too! Real money!

With this issue, IP starts the ball rolling for a new regular monthly feature, a question and answer department tailored to the needs of the working projectionist.

You send in your questions, on anything at all having to do with the projection room, the screen, sound — or anything of special concern to projectionists. We'll try to get an authoritative answer for you.

If your question is of sufficient interest, we will print it, together with the answer and your name and address. And, if we print it, you get a check for three dollars. Should the same question be sent in more than once the earliest postmark will determine which writer gets the cash. Names of other questioners will be printed.

In any case, you will get an answer from IP, either in the mails or in the magazine.

So, get your questions in — fast! Address all letters to "Editor, What's Your Problem, International Projectionist, 19 West 44th St., New York 36, N. Y."

THEATER SCREEN LIGHT CHECKING PROCEDURE

FORM NO. 2 — INCIDENT SCREEN LIGHT MEASUREMENT

THEATER Bijou

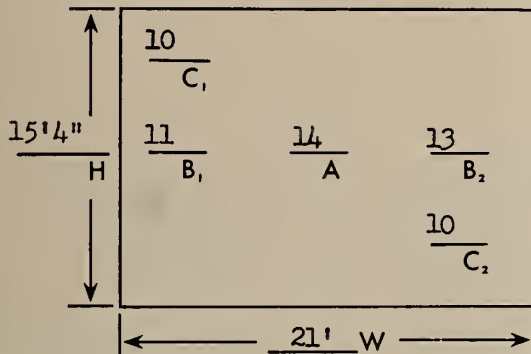
DATE _____

ADDRESS Main Street

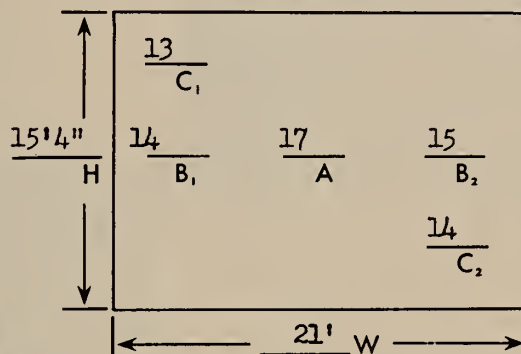
REPORTED BY John Doe

U. S. A.

PROJECTOR 1



PROJECTOR 2



Notes

- "C₁" and "C₂" are located approximately 1/20 of H from the top and bottom edges, and 1/20 of W from sides. "A" is in the exact center.
- These measurements must be made with a standard aperture in the projector.
- On standard screens the ratio of H to W is .73 (H/W = .73). Therefore you may measure the width of your screen (if not known) and to find the height (H) just multiply W by .73.
- Readings are to be taken without any film in the gate.
- All readings are made by holding the light meter parallel to and a few inches away from the screen, and facing the beam of light.

Screen Area

$$\text{Area in square feet} = H \times W = 322 \quad (1)$$

Screen Light Intensity and Distribution

$$\text{Side-to-Center ratio} \quad \frac{B_1 + B_2}{2} \times \frac{1}{A} = 86\%$$

$$\text{Corner-to-Center ratio} \quad \frac{C_1 + C_2}{2} \times \frac{1}{A} = 71\%$$

Screen Lumen Calculation

$$A \times 2 = 28$$

$$B_1 + B_2 = 24$$

$$\frac{C_1 + C_2}{2} = 10$$

$$\text{Total} = 62.0$$

$$\text{Weighted Avg.} = \frac{\text{Total}}{5} = 12.4 \quad (2)$$

$$\text{Screen Lumens} = (1) \times (2) = 4000 \quad (3)$$

$$\text{Screen Lumens without shutter} = (3) \times 2 = 8000 \quad (4)$$

Screen Area

$$\text{Area in square feet} = H \times W = 322 \quad (1)$$

Screen Light Intensity and Distribution

$$\text{Side-to-Center ratio} \quad \frac{B_1 + B_2}{2} \times \frac{1}{A} = 85\%$$

$$\text{Corner-to-Center ratio} \quad \frac{C_1 + C_2}{2} \times \frac{1}{A} = 79\%$$

Screen Lumen Calculation

$$A \times 2 = 34$$

$$B_1 + B_2 = 29$$

$$\frac{C_1 + C_2}{2} = 13.5$$

$$\text{Total} = 76.5$$

$$\text{Weighted Avg.} = \frac{\text{Total}}{5} = 15.3 \quad (2)$$

$$\text{Screen Lumens} = (1) \times (2) = 4950 \quad (3)$$

$$\text{Screen Lumens without shutter} = (3) \times 2 = 9900 \quad (4)$$

IN THE SPOTLIGHT

A NEW ruling, recently handed down by the National Labor Relations Board concerning the setup of voting units for collective bargaining purposes at Tv station WXEL in Cleveland, Ohio, is hailed as an important victory for the IATSE. Heretofore, in establishing such units, the NLRB made no distinction in classifying projectionists, Tv cameramen, and electronic engineers, although the latter group has always had its own union representation. As a result, the projectionists and the cameramen invariably were outvoted and were placed at a disadvantage in applying for jobs in the Tv studios.

This most recent decision by the Board holds that projectionists, cameramen, and microphone boom men, under the type of operation carried on by station WXEL properly belong in the program unit, which is made up of employees who put on shows. The IA long has been recognized as the predominant union in the entertainment world — in stage, screen, and Tv work.

In its petition seeking classification of the projectionists, cameramen, and microphone boom men with the program group, the IA was opposed by NABET (National Association of Broadcast Engineers and Technicians) which sought to have them classified with the engineering group. In its ruling the Board declared: "We are convinced that the studio crewmen and projectionists, with the other program employees mentioned (newsreel cameramen, art designers, scenic designers and floor managers) constitute a homogeneous group which may, if the employees so desire, be represented apart from the engineers."

The Board specified that elections to choose collective-bargaining representatives for the two units established shall take place some time prior to September 28.

• Dubuque, Iowa, Local 103 recently observed its 50th anniversary. L. W.

Brown, business representative, is the last of the original charter members of the Local.

• Stewart Seifert, member of Local 203, Easton, Penna., is serving his 22nd consecutive term as secretary to the Central Labor Union of Northampton and Warren Counties (with headquarters in Easton). Seifert has represented the CLU at practically every AFL convention since 1933.

• The General Executive Board of the IATSE elected Harland Holmden, first vice-president, as secretary-treasurer to succeed William P. Raoul, who has been ill since early this year and is prohibited by his physician from continuing with his official duties.

Harland Holmden, a member of Cleveland Local 160 since 1908, was the Local's business representative for many years until he resigned last Spring to serve as assistant IA president, following the death last January of Assistant President Thomas J. Shea. Holmden has been a vice-president of the Alliance since 1931 and down through the years has been called upon to perform a variety of special services.

• Four members of Local 440, St. John, N. B. were honored by the presentation of long-service pins at the semi-annual meeting of the Local,

which was held recently at the Brunswick Hotel in Moncton, N. B. The presentations were made by William E. Touchie, president of the Moncton District Trades and Labor Council. The recipients, all former presidents of the Local, were James A. Whitebone, Leslie A. Sprague, Wilmot J. Chase, and Edmund A. Chase.

Whitebone has been a member of the Local for 35 years and has served as its secretary and business representative for the last 31 years; Sprague and Edmund Chase have been members for 30 years, and Wilmot Chase for 32 years.

• The resignation of Roy M. Brewer, IA West Coast representative, was formally accepted on September 12 by IA President Richard F. Walsh. Carl G. Cooper, 5th IA vice-president, was named as temporary replacement.

For the past eight years Brewer represented the Alliance in Hollywood labor negotiations and he played an important role in the expose of Communist elements in the motion picture industry. His resignation was due to a disagreement with President Walsh over the future conduct of IA activities on the West Coast. Pending contract negotiations with the Association of Motion Picture Producers will continue with Carl Cooper as the IA top representative.

• Overcoming many obstacles, the Movie Craft Federal Credit Union, which was organized early this year by only seven members of Local 182, Boston, Mass., now boasts of a membership of 45 and assets of \$2,000. The organization serves as a savings and credit agency for its members. All members of IA Locals in Greater Boston are eligible for membership.

David Kaplan, one of the original



W. E. Touchie, president of the Moncton, (N.B.) District Trades and Labor Council is shown pinning a long-service award on the coat lapel of Edmund A. Chase, member of St. John Local 440. W. Edward Laird, vice-president of the Local, is in the center. Other Local 440 pin-winners, standing in front of the group, are Leslie Sprague, Wilmot J. Chase, and James A. Whitebone.

sponsors of the Credit Union, is a member of the board of directors, and Henry Perry is the president. Other officers of the organization are Morris Rotman, vice-president; Jack Rosenberg, treasurer; Myer Rosen, Benjamin Bearman, Frank Labby, credit committee; Hebert Goldstein, Fred Jones, Sam Dinerstein, supervision committee; Anthony Phillips, Solomon Zitter, Hyman Bornstein, J. Rosenberg, B. Bearman, and H. Perry, members of board of directors.

- The New York State Association of Motion Picture Projectionists will hold its annual Fall meeting on Monday,

October 5, at the American Legion Home in Geneva, N. Y. A double anniversary will mark this day—Geneva Local 108 will celebrate its 50th anniversary, and the State Association will observe its 25th.

- *Out-of-Town Visitors to IP Offices:* Merle Chamberlin, member of Local 165, Hollywood, Calif., and projection supervisor at the M-G-M studios in Culver City, dropped in and gave us the low-down on many interesting developments now brewing on the West Coast. William Robacher and W. Tines, of Local 311, Middletown, (Continued on page 26)

the room dedicated in memory of Thomas J. Shea, assistant IA president, who died at the hospital last January.

The committee handling arrangements for the "IA Day" consisted of Thomas Murtha, business representative of Brooklyn Local 4; Vincent Jacobi and Joseph McCarthy, New York Local 1, and Ernest Lang, secretary for New York Local 306.



IA President Walsh, left, and Thomas Murtha, chairman of arrangements for the IA Day, examine replica of plaque placed on the door of a hospital room as a memorial to the late Assistant President Thomas J. Shea.

IA Delegation Visits Will Rogers Memorial Hospital



IA delegation to the Will Rogers Memorial Hospital is welcomed by a committee from Local 749, Molone, N. Y., which has jurisdiction over the Saranac Lake area. Pictured above, left to right, are the following members from the Molone Local: Frank Kowatch, Cornelius S. Clifford, Shirley C. Houff and Carl N. Parsons, vice-president. Continuing, Robert Stott, member of N.Y.C. Local 1, former patient at the hospital who returned with the IA tour for a check-up; Earl J. Amo, president; Owen F. McCahey, secretary, Local 749; IA President Walsh, James J. Brennan, 2nd IA vice-president; Arthur Nocoshian, business representative for Local 749; Albert T. Brown, president, Local 21, Newark, N. J.; Thomas Murtha, business representative for Brooklyn Local 4, Edward A. Connelly, business representative, Local 116, Trenton, N. J., and Frank Mandrake, president, Local 384, Hudson County, N. J.

HEADED by President Richard F. Walsh, a delegation of 150 IA men from 14 states chartered a special train to Saranac Lake, N. Y., on August 26 and spent a full day visiting the patients at the Will Rogers Memorial Hospital. The IA visitors were deeply impressed by the comforts and facilities furnished the patients and they were enthusiastic in their praise for the progress being made at the institution.

IA Members Treated

During the past four years, 35 IA members were taken in and cured at no cost to themselves, reported Charles

E. Lewis, executive vice-president of the hospital. Average cost to the hospital was \$60 per week over an extended period. Lewis emphasized that every precaution is taken to avoid the stigma of charity, each patient being furnished with a private room and bath, and a private porch.

President Walsh, who is a vice-president of Variety Clubs-Will Rogers Memorial Hospital, presided at a luncheon meeting where problems of financing the costly hospital program were discussed. Following the luncheon, Walsh was presented with a replica of the plaque on the door of



Representing New York Local 306, left to right: James Ambrosia, Steve D'Inzillo, N. Y. C. business representative; Harry Gorfmon, Brooklyn business representative; Izzie Schwartz, financial secretary; Mox Kessler, and Ernest Long, secretary.



Moyor Tony Anderson of Saranac Lake (on exhibitor) greets President Walsh at hospital luncheon. Seated, left to right: Dr. Homer McCreory, staff physician; Horland Holmden, IA General secretary-treasurer, and Abe Mantague, president of the Will Rogers Hospital.

STEREOSCOPIC PROJECTION

(Continued from page 10)

make each sound hole a very short hollow cylinder. Reflection of light from the walls of these multitudinous cylinders, or from crater-like formations of aluminum paint encircling them, results in depolarization and conspicuous ghosts.

For the best results, the 3-D screen should not be perforated at all. But because the output power and frequency characteristics of many theatre

sound systems cannot be modified to give good sound with solid screens, perforated screens are usually necessary. Such screens should be painted first and perforated afterward by means of very sharp dies that do not "cup" the screen around each hole. Ragged and cupped sound holes depolarize light, hence a 3-D screen should have clean-cut perforations and exceptional flatness.

Since certain makes of sound screen utilize the principle of cupped holes for superior sound distribution,

this very important matter should be brought to the attention of every exhibitor contemplating the purchase of a new screen for 3-D showings. *The projectionist should carefully examine samples and okay the screen before it is installed.*

The screen-illumination problem is particularly serious in polarized-light projection. The use of two projectors simultaneously does not double apparent picture-brightness because the patron, wearing Polaroid viewers, sees the light of only one projector with each eye. So even though two machines are operated at the same time, "effective light" is that furnished by one projector *minus the large losses occasioned by two thicknesses of Polaroid*, one thickness over the projector lens and the other over the eye of the observer.

The Polaroid projection and viewing filters in use at the present time transmit only 40 percent of non-polarized light, wasting 60 percent by absorption and reflection. But Polaroid is able to transmit 70 percent of polarized light vibrating in the plane of the filter axis. So with two thicknesses of Polaroid, only 28 percent of the light gets through to the eyes of the audience, fully 72 percent being wasted! The specular reflecting characteristics of the aluminum screen compensate for this terrific loss of light only partially.

Not a "One Man" Job

A very serious disadvantage of the two-strip 3-D system in theatres not having four or more projectors is the necessity of intermissions for changing reels. Even with 5,000 foot reels running from 50 to 55 minutes, there must be a mid-feature break.

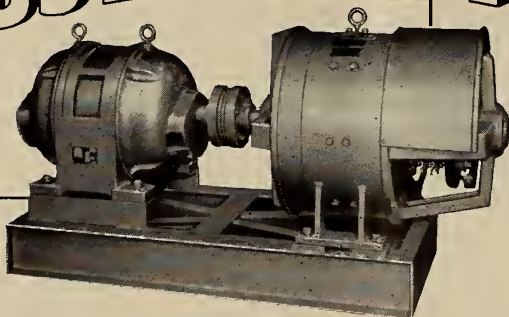
The projectionist, however, suffers even more than the public. His troubles begin with the inspection of the newly-arrived prints and continue unabated until the last frame passes by the aperture. The work of repairing two stereo prints, which must correspond frame by frame throughout thousands of feet of film, can be, and usually is, tremendous.

It goes without saying that two-strip 3-D is not adapted to "one-man" projection rooms and it is difficult to guarantee even reasonably good projection without three projectionists, or four when a stereophonic recording on a separate film is used.

[TO BE CONTINUED]

A HERTNER TransVerteR FILLS THE BILL IN MEETING ALL POWER REQUIREMENTS FOR . . .

3-D PROJECTION



Exhibitors everywhere are finding out that they are faced with new problems when 3-D equipment is installed. One of the chief obstacles is getting increased amperage and additional screen illumination to meet the basic needs of 3-D projection.

Loss of light through use of filters plus giant screen sizes makes existing projection equipment inadequate to do the job.

Manufacturers have increased carbon-arc amperage and voltage requirements up to 50% for 3-D projection, hence additional power is mandatory.

Fortunate are theatre operators, for Hertner has tried and proven motor generator units that more than meet the maximum power requirements of 3-D projection. One of these is the "CP" TransVerteR that has been widely accepted for use in large theatres and drive-in theatres.

In addition to the "CP" Trans-VerteR Hertner manufactures five other types of TransVerters for theatres of all sizes.

THE TRANSVERTER LINE INCLUDES:

TYPE "LV" for Simplex HIGH 1 KW Arcs.

TYPE "HI" for Suprex Type Arcs.

TYPE "HIH" for Suprex and Spot Arcs.

TYPE "HS" for 50-63 Volt High Intensity and Spot Arcs (for National Excelite 55,000 type lamp).

TYPE "MA" for 50-70 Volt Low and High Intensity Arcs.

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OBITUARIES

MACE BROWN, 58, member of Local 343, Omaha, Nebr., succumbed to a heart attack on August 3 last. He joined Local 343 back in 1917 and at the time of his death was employed in the projection room of the Town Theatre in Omaha.

IRA BALDRIDGE, 52, member of Local 204, Little Rock, Ark., since 1927, died August 28 in the Baptist Hospital. He had been in ill health for the past several months but prior to his illness he was chief projectionist at the Capitol Theatre, a position he held for a number of years. Baldrige served Local 204 as business representative and as vice-president and was well known in IA circles throughout the Alliance. He is survived by his wife and three sons, one of whom, Robert Ira, is a member of the Local.

VERNON E. HOSTETTER, 59, member of Local 228, Toledo, Ohio, died early this month after a ten-day illness. He was a member of 228 since 1914 and served the Local in various official capacities. Hostetter worked in several theatres in Toledo, the last being the Esquire, a position he held for the past ten years. He is survived by a son and daughter, and several stepsons and stepdaughters.

GLENN L. WAGNER, 56, member of Denver Local 230, died recently after a short illness. He was born in Fruitdale, Colo., and was a veteran of World War I. Survivors are his wife, a son, and a sister and brother.

MILTON STRAUSS, 43, member of Local 650, Westchester County, N. Y., since 1936, died suddenly. Strauss was also a member of Stagehands Local 366, Westchester County.

Altec Stereo to Loews

Installation of stereosound systems in ten Loew theatres in New York and Brooklyn has been completed under the supervision of C. S. Perkins, Altec Service Corporation Northeastern division manager. The houses are the Paradise, 175th Street, Victoria, 83rd Street, 72nd Street, Lexington Theatres in New York City, and the Valencia, Kings, Pitkin, and Gates in Brooklyn.

Informal instruction periods covering the systems were conducted by Altec technicians at the Paradise, Kings, and Pitkin. Field representatives and engineers working on the installations were Fred Hall, R. W. Kautzky, S. N. Trent, G. W. Evans, F. A. Brown, R. Siegel, together with J. T. Eves and C. A. McCork, Eastern division branch managers in Washington, D. C., and Philadelphia.

The stereoscope, an apparatus by which the effect of depth was given to pictures, was invented in 1819 by Sir David Brewster.



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Every day, more and more people are turning to motion pictures for fine entertainment.

Now, with the equipment picture taking a positive upward turn — why not look ahead with National. National Theatre Supply has been caring for the needs of exhibitors for over 27 years . . . and whatever your need, when it's available, **National will have it!**

We may not have all the answers — but there's one thing we do know and that is theatre needs. So — for real service, for the finest for your every equipment and supply need, place your faith in National — and face the future with confidence!



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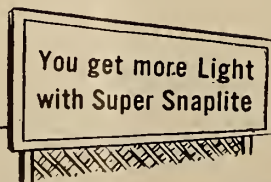
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True speed of f/1.9 in all focal
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Simplex Now Producing CinemaScope Soundhead

Production of the new Simplex X-L magnetic reproducer for use with CinemaScope and other single-film magnetic stereophonic sound systems, is in full swing, according to Walter E. Green, president of National Theatre Supply. Mr. Green stated that the Simplex X-L has been chosen by 20th-Century Fox for the world premieres of "The Robe" at the Roxy Theatre, New York City; Grauman's Chinese Theatre, Hollywood, and for premieres in key cities throughout the country.

Developed by International Projector Corp. engineers in collaboration with General Precision Labs., both affiliated with National Theatre Supply, the new soundhead is designed for maximum ease of installation. It needs no drive motor or mechanical coupling, since it is completely film-driven. Pre-amplifiers, effects switch and power supply are plug-in units, mounted in compact, ready-to-install wall cases. Because of its easy adaptability to standard projectors, it is expected to find ready acceptance by exhibitors.

The X-L magnetic reproducer weighs but 24 pounds, and measures 9" in width, 13" in depth, and 4" in height, the most an upper magazine would need to be raised for installation of the unit. For this reason, and because it is offset towards the back, the new soundhead allows for more head room and front wall clearance. Adequate clearance for threading for optical sound, by-passing the magnetic head, is provided for and easier film loading is made possible. The X-L employs the "tight loop" system, the accepted standard used by studio recording systems.

The film speed stabilizing system, with the main stabilizing drums made of non-magnetic, hardened, ground stainless steel, holds flutter down to less than one-tenth of one percent.

The manufacturing facilities of International Projector Corp., long one of the leaders in projection and sound equipment, have been expanded to handle the numerous orders already placed for this new soundhead.

Victor Animatograph Moves

The New York office of the Victor Animatograph Corp., Davenport Iowa, has been moved from 330 West 42nd St. to new and larger quarters at 551 Fifth Ave., it is announced by Sam. G. Rose, president. The New York office is headed by Horace O. Jones, vice-president.

Increased activity in the sales, manufacturing and export fields dictated the move, Mr. Rose said.

Projectionists' Aid Sought In Survey

BOYCE NEMEC, executive secretary of the Society of Motion Picture and Television Engineers, compares the present headlong rush of the film industry into new systems with a ship under full steam racing through an ice field without radar.

"It will be just plain dumb luck if we don't smash into something," Nemec told *International Projectionist*. Mr. Nemec, through IP, appealed to projectionists throughout the United States and Canada to help jog exhibitors into action on the current theatre survey now being conducted by the SMPTE.

The survey, launched in May at the urgent request of many segments of the motion picture industry, has been lagging badly, Mr. Nemec said, "perhaps because theatre owners are mightily occupied with immediate day-to-day problems."

As of September 1, only 275 replies had been received although many thousands of questionnaires had been mailed. Many more must be answered before any valid study can be made and conclusions, vital to the industry, drawn. Immediately following World War II, Mr. Nemec said, SMPTE sought the help of projectionists in a survey on screen brightness and "received 100 per cent cooperation," in sharp contrast to the apathy of exhibitors in the present survey.

Briefly stated, the Society wants to know how many theatres are equipped for 3-D, wide-screen projection and stereophonic sound. Also, what are the physical limits to which producers and equipment suppliers can go in developing the new systems.

Admitting that the survey questionnaire, is a bit complicated, Mr. Nemec pointed out that many of the questions asked can be answered by the projectionist. The projectionist, he said, knows offhand the focal length of his lenses, the size of his picture inside of masking, and the answer to many of the other questions asked.

Other than the expenditure of three cents for a stamp, Mr. Nemec said the survey costs the exhibitor nothing. In the event that some of the theatre measurements may be a little difficult to take, expert technical help may be a little difficult to take, expert technical help may be obtained free from the Altec and RCA service companies, from all members of the Theatre

Equipment Dealers Association and from all branches of National Theatre Supply.

Because the projectionist is usually the only available technical expert in the theatre, and because his advice is sought whenever new equipment is needed, the SMPTE feels that he is in

a position to prod the theatre owner into action on the survey which, the Society holds, is vital if some order is to be brought out of the present chaos.

If, by any chance, the theatre owner has mislaid the copy of the survey questionnaire mailed to him, or if he hasn't received one, copies may be obtained by dropping a post card to Henry Kogel, Staff Engineer, SMPTE, 40 West 40th St., New York 18, N. Y.

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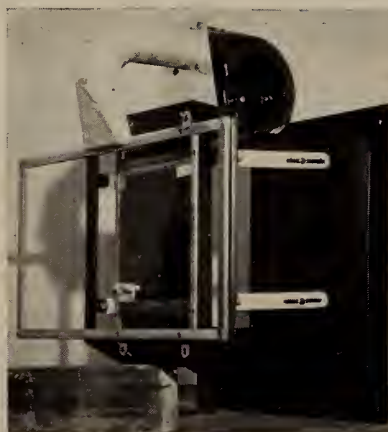
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The DIT-MCO 3-D Filter Alignment and Cooling Mechanism is designed to properly align the filter at any position or angle for maximum focus and light, and to lock it in that adjustment for all future use. The cooling assembly gives ample and even distribution on the filter, as requested by the top engineers of the industry.

This mechanism has sufficient width to accept the wide angle projection of Cinerama or Cinema-Scope. For standard projection, all the projectionist has to do is to slide filter to non-operating side.

Bottom of housing slants downward at a 25-degree angle toward screen (for indoor theatres) so that regardless of the angle of projection, the beam will pass through freely. For Drive-In Theatres the slant is upward so that the beam will pass through freely to the screen tower.

The filter frame has eight adjustments, so that the filter may be placed in proper position for maximum light and focus — AND LOCKED. These eight adjustments are:

Forward or backward at angles —
In and Out — Up and Down —
Left or Right at angle to horizontal

DRIVE-IN THEATRE MFG. CO

Division of DIT-MCO, Inc.

505 West 9 Street, Kansas City, Mo.

IN THE SPOTLIGHT

(Continued from page 21)

N. Y. also stopped by to say "hello" and to renew their subscriptions to IP.

- E. O. Wilschke, operating manager of Altec Service Corp. celebrated 25 years service with the company last month at a party tendered in his



•
E. O. Wilschke,
operating manager for
Altec Service
Corp.
•

honor at Altec's New Orleans branch office. Wilschke stopped off at New Orleans on a coast-to-coast itinerary for the company. Bruce Mewborn, branch manager, and field engineers W. Y. DeJarnette, Duke Chambers, and James Skelly, Jr., were among the Altec personnel taking part in the celebration.

- Wally Byrne, former New York business representative for Local 306, has been named chief projectionist of Loew's State Theatre, the circuit's key house in NYC, by M. D. O'Brien, projection supervisor for all Loew's houses. Although the appointment has only recently been made official, Wally has been acting chief projectionist for the past three years.

- In a signed article appearing in the *New York World-Telegram and Sun* last month, IA President Richard Walsh declared his optimism on the stabilization of labor in the many problems arising incident to the introduction of the new wide screen and 3-D techniques. "In many places, increased manpower has been required to handle the new dimensions, with the employer readily recognizing that fact," stated Walsh. "Preparing the show each day has called for some additional time — the problem of shifts had to be adjusted," he continued. "These and other business matters are being ironed out in the routine, with almost a complete absence of labor trouble. Through our

organization, certain general standards have been quickly established."

President Walsh further added "Technological stability has been far more difficult to achieve . . . Conflicting methods of spreading the picture over the screen still vie for acceptance. Gradually a set of standards is beginning to emerge but there has been a good deal of confusion."

Movie Scripts for Blind


Long-playing records, known as Sightless Cinema, designed to enable the blind to enjoy motion picture scripts were demonstrated in New York recently. The sound track of "Detective Story" as recorded by RCA with explanatory interpolations to cover the action in the picture, was used in the demonstration.

The Sightless Cinema organization will operate through a system of 30 public library exchanges providing free service from coast to coast.

Reissue of 3-D Specs Banned

The Chicago Board of Health has sent telegrams to theatres in that city forbidding the reissue of Polaroid glasses to patrons of 3-D movies. The action came after a check of 15 pairs of glasses resulted in the charge that they harbored organisms that might cause infections of the eye, skin or throat.

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Dealers...in every state in the Union.**

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DOES CINEMASCOPE HAVE THE ANSWER?

(Continued from page 8)

time of ordering soundheads and other parts to avoid later delays and troubles. In some cases, as with old or orphaned equipment, the installation may require some mechanical work on the projector to permit the installation of the soundhead.

Demagnetizing of Parts

Again, at this point. Fox advises that all new parts be demagnetized before installation to eliminate any residual fields which might result from manufacture or handling. The company adds that a takeup adjustment that is too tight will cause nicking on the back edge of the sprocket perforations. Large hub reels minimize this possibility.

Because of the peculiarities of CinemaScope, some standards have been changed. For this reason, and because of the amount of space used by the picture image and by stereophonic sound, some additions and modifications of the projection room equipment must be made.

For example, to accommodate the quartet of magnetic sound tracks, the sprocket holes of standard 35-mm film have been narrowed from .110 to .078 inches. This was done because of many advantages in the smaller size. Mr. Sponable pointed out that the old standard is a throwback to the days of nitrate film with its high propensity to shrinkage. Modern acetate film shrinks but slightly and the large holes are no longer necessary. The CinemaScope sprocket size is entirely compatible with all film now in use, with the exception of some very old and badly shrunk nitrate film. Therefore, *all* the sprockets, and perhaps some of the keeper and pad rollers as well, *must be changed* for CinemaScope.

While the projectionist does not have to worry too much about the changeover to CinemaScope, that job being largely in the hands of the field representatives and engineers of the suppliers, he does have to worry about his film handling equipment.

Splicer Changes

Film splicers ordinarily are equipped with register pins and these must be changed or new equipment obtained. Again, the company points out, any change which is made will

permit the handling of existing product either from Fox or from other companies.

Sprocket driven footage counters must have the sprocket tooth width and spacing modified. With most devices of this kind it is sufficient to machine off the inside surfaces of the teeth.

Also, it is desirable, but not mandatory, that aluminum reels be used, particularly when using 2,000-foot

spools. Aluminum reels, Fox points out, particularly the cast versions, generally maintain their shape and there is no possibility of introducing noise into the magnetic soundhead because of incipient magnetization of the reels. It is strongly recommended that badly misshapen reels be not used since they can easily cause uneven winding which aggravates the possibility of edge damage, a doubly important consideration in the case of CinemaScope because of the two outer sound tracks.

So much for the CinemaScope

the
right tool

FOR THE JOB



Using the wrong tools or makeshift substitutes makes any job more expensive because it takes longer and the result may not be up to standard. The Altec Service meters are the right tools for the testing and servicing of your booth and sound equipment. They are carried by every Altec Service Man. These meters were designed in Altec's laboratories after years of experience in theatrical service. They represent an investment of thousands of dollars in engineering and manufacturing—an investment that saves you money because it helps your Altec Service Man to do his job right. Rely on Altec. It's the finest technical service for theatres.

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sound, and now to the problem of light!

Obviously, Fox engineers faced the difficulty inherent in any big screen projection system, how to increase screen illumination so as to get a bright picture over a wider area. Despite Miracle Mirror and Astrolite screens, both pushed by Fox, it appears that projectionists will have to jump the light at the source and, as with 3-D, this means increasing the amperage. Only tests under specific

conditions in each individual theatre can turn this trick properly. Projectionists are referred to the article on screen illumination on page 18 of this issue of IP.

Some details anent the Miracle Mirror screen were given in the August issue of IP in the article on "Converting Theatres for CinemaScope." This screen has "an embossed surface containing myriads of tiny reflecting mirrors that have been arranged in predetermined forms with predetermined accuracy by exquisitely engraved embossing rollers." Fox claims that this screen actually doubles the amount of light reflected back to the audience. The company also states that this screen, as well as the Magniglow Astrolite, is ideal for conventional third dimension projection, solving much of the light problem. Both screens are of the "controlled reflectance" type and, according to Earl Sponable, will not depolarize when used for 3-D pictures.

The Projection Lens

The heart of CinemaScope, however, is the anamorphic lens, used both in the filming of the picture and in the projection. For projection, the CinemaScope optics have been designed as frontal attachments to the regular projection lenses. They represent an approximate $6\frac{1}{2}$ inches of extension beyond regular lenses with a diameter of $2.25/32$ inches, and an

approximate $9\frac{1}{2}$ inches in the case of lenses with a four-inch diameter. It is essential for CinemaScope that lenses be of top quality.

Complete instructions on the use of the CinemaScope optics are available from the suppliers and need not be gone into here. Once they are properly adjusted they stay that way but, if necessary, they can be readjusted and relocked by the projectionist. This is by means of a helical rack and pinion.

CinemaScope may seem a bit complicated at first, but in actual projection room practice it is really quite simply handled. As can be seen from the foregoing, there are problems — and, even Fox admits, others may arise. Splicing, for example, offers certain difficulties. Film must be properly scraped and a cement used that will not dissolve the sound track. However, there is no problem of sync as in the case of sound on a separate film. There is no problem of picture sync as in the case of two-film third dimension. What is more, the industry trend at the moment seems to be toward wide-screen and the anamorphic lens, and to the single film magnetic sound system.

Motiograph Adds Ten

Motiograph announced this month that its stereosound system will shortly be installed at the Strand Theatre in New Orleans and in 5 other theatres in the Gulf area. The company also reported the pending installation of its stereosound system in 2 Oregon theatres — the Molalla Theatre, Molalla, and the Rivoli in Pendleton.

Republic's Aspect Radio

Republic Pictures has adopted the aspect ratio of 1.66 to 1 as its standard for wide-screen pictures. The actual frame size of the film will not be altered by the studio, so that the 1.66 to 1 standard will permit projection in a number of screen proportions ranging from the conventional 1.33 to 1 up to 1.85 to 1, if the theatre so desires.

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REBIRTH OF A THEATRE

(Continued from page 13)

tom switches are the interlock selectors. Directly below the interlock selectors are the interlock control switches, two for "red control" and two for "blue control."

148-Foot Throw

The throw from the aperture to the screen is 148 feet. Use of the 24 by 42-foot Daylight screen with this throw made it necessary to get a higher amperage for more light so the Huff coolers were installed, using 9-mm by 20-inch black carbon positive and 8-mm by 9-inch copper-coated negative carbons. This enabled the Peerless Magnarc setup to cover the screen at 80 amps. The permanent magnets of the coolers pulled down the tail flame, thus increasing the light and reducing carbon consumption. Four pairs of red and green pilot lights, located at the bottom of the interlocking panel, were connected to the water coolers by means of pressure switches. As an additional safety device these pilot lights change from red to green when the water is turned on at each lamp.

The old 80-160 amp generator is used on the No. 2 and No. 3 lamps, and the McColphin Christie 90-amp 3-phase rectifiers are used on the No. 1 and No. 4 lamps. By means of a switching arrangement it is possible to interchange the generators or rectifier to any lamp. At present, all four lamps are pulling 80 amps and ap-

proximately 38 volts at the arc.

It must be remembered that, as completely separate systems, the optical and magnetic stereophonic systems each have their own faders, monitors, amplifiers and speakers. The theatre's original optical system contains the RCA Model 242 projector. The optical sound heads are located on the two inside machines, No. 2 and No. 3. The speakers for the theatre are located directly behind the center of the screen and are the standard RCA 242 speaker setup.

The Sound System

For the stereophonic sound system, Goldstein installed Simplex sound heads on No. 1 and No. 4 machines. A triple magnetic reproducer (See page 5), located just below and forward of the standard scanner, was installed inside each soundhead. This reproducer, perfected by Walter McCormick, a member of Hollywood Local 165, permits the head to be threaded either optically or magnetically. Each reproducer, which can be installed on either Simplex or RCA sound heads, has three pre-amplifiers attached to it, marked "left", "center" and "right." The rack has four 50-watt Atlas amplifiers, including one spare.

The three sets of speakers backstage are Altec Lansing A-4's. The sound changeover is located between the No. 2 and No. 3 machines. The monitor for the stereophonic sound system is installed in the center of the projection room beside the optical monitor. The twelve effect speakers are located throughout the theatre and are controlled through the optical system.

During the regular performance the projectionists are called upon to change lenses and apertures for effect in presentation. Thus the theatre patrons are given spot demonstrations of both standard and large screen presentations. Next to each machine is a complete set of four different aperture sizes — standard, 166, 175 and 185. For 3-D features permanent Polaroid filters are used. These are set in metal frames and can be removed easily from the ports. No automatic masking is used but an effect slide is used to give the effect of drapery around the picture.

History was made at the Picwood when "Kiss Me Kate" was presented. This 3-D stereophonic sound picture was run continuously on 1000-foot reels.

PERSONAL NOTES

F. T. BOWDITCH has been appointed associate director of research of the National Carbon Research Laboratories, Cleveland, Ohio. Mr. Bowditch has been associated with the National Carbon Co. since 1920, and has carried out extensive studies of the properties of the carbon arc, particularly in its application to motion picture and Tv projection. He has been active in the Society of Motion Picture and Television Engineers, recently serving as engineering vice-president of that group.

DAVID S. GREENLAW has been named assistant director of the color technology division of the Eastman Kodak Co. The company also announces the promotion of George H. Rieg to assistant superintendent of the Kodacolor processing division.

JAMES C. WHITE, president and general manager of the Tennessee Eastman Co. and head of the Texas Eastman Co., has been named to the board of the Eastman Kodak Co.



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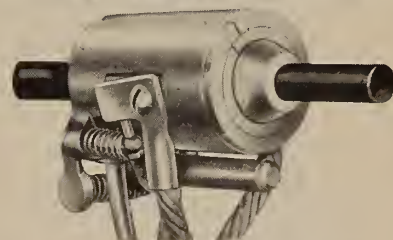
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CHECKING SCREEN LIGHT

(Continued from page 18)

justment knobs, clear the field as much as possible, to arrive at a light-field balance.

5. Explore the arc-to-mirror distance by moving the arc toward the mirror until the screen light becomes yellow; then away from the mirror until the light becomes blue; then toward the mirror again just into the white light zone where there is not too much fall-off at the edges of the screen.

NOTE: The gas ball of the carbon arc may be considered as a flat disc with a bluish arc stream in front and a yellowish shell to the rear. If the alignment distances, mirror-to-film-plane and mirror-to-arc are correct, the pure white light of the gas ball disc will be focused on the film plane and in turn on the screen by the projection lens.


Maximum Light Adjustment

Within its white-light range, when using a 7-mm Suprex positive at 45 amps, it is possible for you to vary your total within the white-light range by moving the arc toward or away from the mirror. The larger the carbon for a given mirror magnification, the greater this leeway of movement will be. As the arc is moved toward the mirror, you will find that the spot on the aperture plate becomes larger, the screen light distribution becomes flatter, and the total screen light is reduced. As you move the arc away from the mirror, the spot on the aperture becomes smaller, the side-to-center difference becomes greater, and the overall screen light is increased.

It is easily seen that if the crater gas ball is not facing the mirror correctly, it may be impossible to clear the light field at anything like maximum screen light. Therefore, if the plane of the crater is allowed to shift because of a short grip in the holder, or burned carbon savers, the probable result is that in attempting to operate where the least off-color light is noticed, you have set mirror-to-arc position where the largest spot is obtained on the aperture plate, and so at minimum light within the white-light range.

6. Secure lamp to base and recheck No. 1.

7. The position of the optical cen-



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ter of the mirror in relation to the center of the crater will usually be found to be satisfactory, but it can be checked roughly by measuring from the edge of the crater to the outside edge of the mirror at four equidistant points around the mirror circumference.

8. Check the position of the fire shutter and automatic dowsers with the projector running. These should raise sufficiently to clear the entire light cone angle, from mirror to aperture.

As a final step it is necessary to redetermine the screen illumination by taking meter readings as described in the Research Council form. If all of the preceding instructions have been followed, you should obtain an average of between 80% and 100% of the top illumination.

Typical port glass (plate glass) has a light transmission of from 92% to 86%. Inferior grades of glass or dust may lower this transmission considerably. If the surfaces of the glass are not exactly parallel, the picture may be distorted and out of focus over certain areas. Port glass light loss can be reduced to 2% or 3% by using a selected coated port glass. Information on this glass is available from the Research Council. This is a saving in light that is worth attention.

Projectionists desiring the blank data sheets for conducting these tests may obtain them from the Motion Picture Research Council, 1421 North Western Ave., Hollywood 27, Calif., or from the Society of Motion Picture and Television Engineers, 40 West 40th St., New York 18, N. Y. In the preceding article liberal use was made of information contained in "An Optical Alignment Check System," Charles W. Handley, *International Projectionist*, June, 1950; "Report on Screen Brightness Committee Theatre Survey," W. W. Lozier, *Society of Motion Picture and Television Engineers Journal*, Vol. 57, Sept., 1951; "National" *Projector Carbon Handbook*, 4th Edition, 1948.

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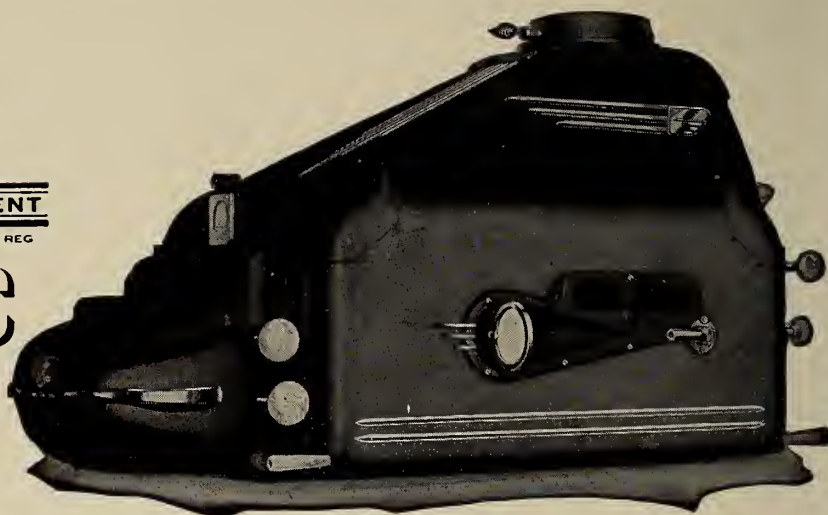
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OCTOBER 1953

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MONTHLY CHAT

SO FAR nobody has suggested that projectionists are angels. But they're not magicians either! This latter idea was booted about at the recent Allied meeting in Boston by the head of a well-known service company — and IP's a bit peeved at the guy.

The trouble with 3-D projection, he told an audience of theatre owners, is the projectionist.

According to the knowing gentleman, the boys in the hot box take a devilish delight in lousing up the works. They don't give a hoot whether the twin films are in sync or not. They play games with the sound equipment and raise hob with the show. Meanwhile, the speaker opined, the poor exhibitor tears out his few remaining hairs — and gives the customers their money back.

Come to think of it, IP's more than peeved. We're roaring mad!

Let's look at the record. When the going is good, the boys in the projection rooms are kicked around, their role in putting on a good show minimized. But when new systems arrive, the exhibitor, who doesn't know a sprocket from a leader, suddenly becomes acutely conscious of the guys upstairs. He asks his projectionists' advice about new equipment. He depends on his crew to keep the customers happy — and to keep them coming back for more with admission money clutched in their hot little fists.

Then along comes this fellow from the service company (who made the trip to Boston in the first place to do some ingratiating with his exhibitor customers) and he tries to get himself, and others, off the hook by blaming everything that's wrong with 3-D on the projectionist!

May IP respectfully suggest that, while the projectionist does slip sometimes, the big fault with 3-D lies with the exchanges. Beat up prints, unmatched prints, prints spliced out of sync, prints with screwball start marks. These little items can raise more hell with 3-D projection than anything else.

When we come right down to cases, stereo troubles began when the motion picture industry jumped into it with both feet before it was ready for 3-D, and before 3-D was ready for the industry. Cinerama started the scramble — and everybody tried to get into the act.

The exhibitor, bless him, will spend all kinds of money on the front of the house, skimp when he can on his projection equipment — and then try to blame the projectionist if everything isn't perfection. The gentleman in Boston was simply playing the role of Mr. Echo.



Cauldron boil . . . and kettle bubble . . .

Difficult though they may be, situations like these do come off; thanks to the care with which film and chemicals are keyed to specific photographic situation and production methods; thanks, also, to the rigid control of processing solution strength and temperature.

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Film Industry Eyes New Stereo Sound

Panaphonic system, described here for the first time, provides full stereophonic effect with extremely low cost compensating for the higher fidelity of the sound-on-film magnetic systems.

By THOMAS L. BURNSIDE

CONSIDERABLE INTEREST is being shown in Hollywood and New York in an amazingly simple optical system for stereophonic sound developed by Dorsett Laboratories, Inc., of Norman, Oklahoma. The system, dubbed Panaphonic, by Loyd G. Dorsett, president, is now being used extensively in test theatres in the Southwest and has been demonstrated on the Coast. As this is written arrangements are being made for a demonstration in New York at the behest of technical heads of several of the major film companies.

Details of the Panaphonic system are revealed for the first time, and exclusively, in this article.

Chief beauties of the system, according to Dorsett, are its simplicity and extremely low cost. The sound unit itself, mounted between the projector casting and the top magazine in the same manner as the Fox-developed penthouse magnetic sound head, is barely an inch and a half high and, in all essentials, is the familiar optical arrangement of exciter lamp and photocell.

"Recent developments in motion picture sound techniques have left many exhibitors wondering what sort of equipment to buy," Dorsett told this writer, "and they wonder whether any of them can really justify the cost. That's where this system comes in.

"Unquestionably, many theatres could benefit from the installation of stereophonic sound, whether they use photoelectric or magnetic tape pickup," he went on, "but some owners are wondering whether the public's interest will last or not and they worry about making the substantial investment required for magnetic systems."

In this writer's opinion, based on solid tests made in the industry, magnetic sound offers much higher fidelity than any optical system. However, for many years the public found enjoyment in films using the old optical sound. Thus the issue resolves itself to one of cost.

The Dorsett sound directional system, the company claims, is compatible with all other sound systems. We wonder, after looking at the Dorsett mounting atop the projector casting, how the Fox four-track-on-one-

film, which is mounted in the same spot, could be by-passed.

How System Works

The Panaphonic system, which uses darkened intersprocket spaces as control tracks, operates as a binary signal system from darkened inter-sprocket spaces on both sides of the film. Old films with optical tracks can be cued for the system in a manner to be described later on. Old films, Mr. Dorsett said, may occasionally be cued on the outer edges.

The darkened areas are sensed by two small photocells and their amplified outputs operate ordinary relays or relay tubes arranged in two binary "decades", thus promoting four "modes", or loudspeaker combinations. Those generally used are 1) centerscreen horns, 2) right side horns, 3) left side horns, and 4) all speakers, including side and rear of the auditorium.

Photoelectric control tracks of various positions and designs have, of course, been used before. But the Panaphonic system is extremely simple, and should be reliable, because of its binary character. Dark-

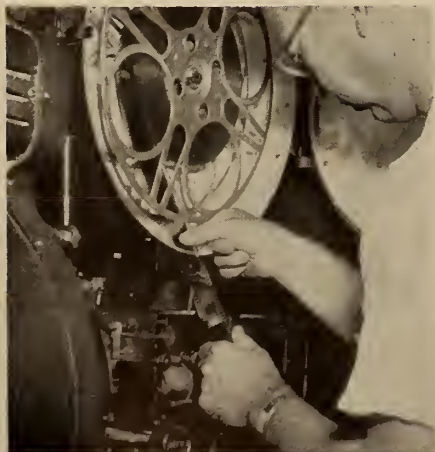
ened areas are, obviously, either present or absent on either side of the sprocket holes and it is thus possible to cue in special effects in a moment with a marking pen and a pair of rewinds. A special instant drying ink has been developed and has withstood more than a hundred screenings, yet it can be wiped off with a damp cloth and a solvent. In new prints, of course, the film would be darkened photographically.

It should be noted that each "mode" or combination of speakers must accept the entire sound signal in the case of single track films and that separation of sounds heard simultaneously cannot be obtained. However Dorsett engineers claim that considerable experience with cueing existing films has shown that this effect can psychologically be closely approximated by rapid and careful sequential shifting of modes by Panaphonic's automatic system.

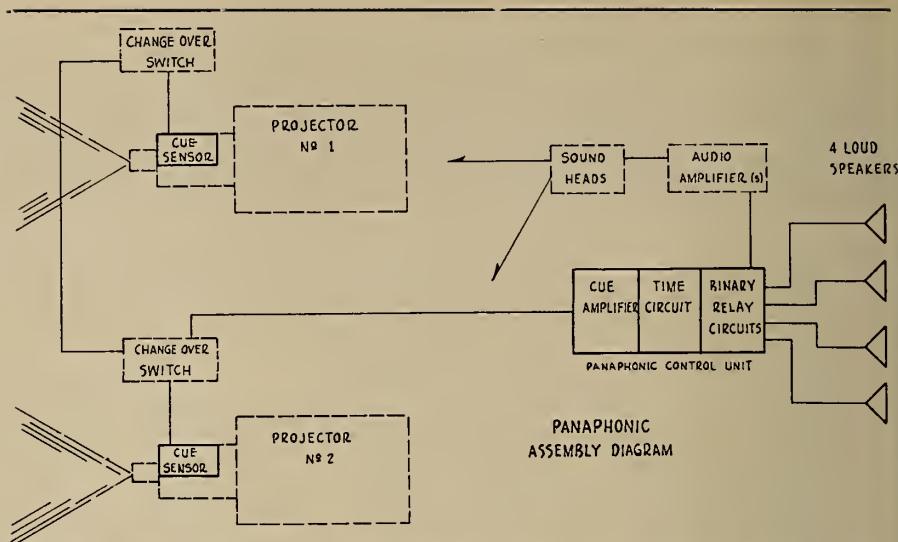
"Most moviegoers," Mr. Dorsett said, "do not notice the difference between Panaphonic and other stereophonic systems, except that, since the new system uses auditorium speakers more freely, emotional impact is greater."

It is conceivable, he added, that two photoelectric sound tracks might be provided, compatible with present movietone prints. In this event, the Panaphonic system could present separated simultaneous sounds in any combination of directions detectable in the auditorium.

The projection room equipment consists of a cue sensor for each projector and an enclosed, or rack mounting, chassis containing cue amplifiers, a filter, a timing circuit and multiple contact relays.



Threading for Panaphonic is accomplished by sliding the film into a slot on the side of the sensor unit. Alignment is automatic.



Above is an assembly diagram of the Panaphonic system. The sensor unit, mounted "pent-house" style above the projector costing, consists of an exciter lamp and two tiny photocells.

The cue sensor is a small box, about an inch and a half high, containing the two photocells and a light source. It may be mounted in a thin "button on" unit on top of the projector head so that the film is drawn downward through it by the first sprocket in the head. There is no change in the conventional threading motions and the film is automatically aligned in the sensor.

The cue lead is adjusted by the timing circuit to conform to the type of projector used. This timing circuit, together with the filter, also serves to eliminate spurious cues due to film splices or other causes.

This equipment Dorsett said, has been installed in a number of theatres of varying sizes. In some, having only one amplifier, no additional audio power was required to operate the auditorium or side speakers. In some installations a second sound amplifier is recommended in order to handle the extra power for the side and rear speakers. Also, in certain installations it has been found advisable to install filters in the side speaker circuits for better acoustical balance.

Development of the system, largely in the field, covered a period of many months. Units are now installed in 14 theatres and have been tested for the past three months, Dorsett said.

Films are presently being hand cued using the dye developed at the Dorsett Laboratories for the purpose. The time required for hand cueing an average full length feature picture is about twelve man hours for the first print, and from one to two hours for

extra prints. It is anticipated, however, that major studios may soon be releasing prints photographically cued for the Panaphonic system. These cues will not interfere in any way with other stereophonic tracks or marks currently in use, hence will permit the use of the same film in other systems.

Demonstrations of the Panaphonic system have been held in Hollywood under the sponsorship of the Motion Picture Research Council. These demonstrations were held in the Paramount Studio theatre and were attended by sound experts from most of the major studios. One picture shown in the system, with the hand cueing, was Paramount's "War of the Worlds."

Public acceptance is being tested throughout Oklahoma and in parts of Texas by the Video Theatres chain. With the specially cued feature films, a trailer cued for all four modes is shown as a demonstration.

Loren L. Ryder, Paramount's research chief, was interviewed by IP on the system when he came East for the SMPTE convention. He was enthusiastic.

"This is the first move towards simplicity this year," he said.

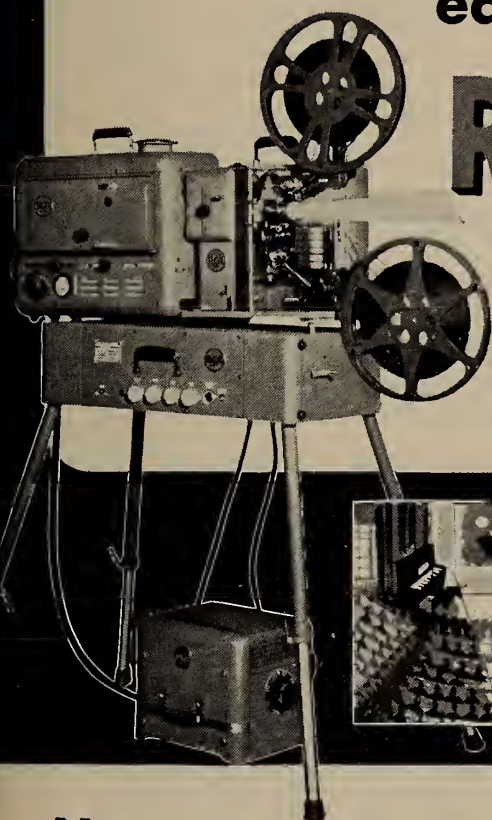
Dorsett Laboratories is a research and development group which has been engaged primarily on classified projects for the armed forces. In the development of Panaphonic it has borrowed from techniques evolved during military research. The laboratory, Dorsett said, is currently working on two other projects for the motion picture industry.

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MORE LIGHT than ever thought possible with a 16mm projector assures users of the RCA Porto-Arc Projector of sharp, clear and bright pictures on the screens of large auditoriums.

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RCA's new Porto-Arc 16mm Projector operating at 30 amperes delivers up to 1600 lumens, providing brilliant screen images on screens as wide as 20 feet. When operating at 10 amperes, the 750 lumen output provides brilliant pictures on screens up to 15 feet wide, and one set of carbons burns over two hours.

The powerful amplifier is especially designed for 16mm reproduction of speech and music at high levels with the best sound quality. It provides all the power output needed for a wide choice in speaker setups—from single or multiple portable speaker units to theatre-type systems, and it also provides microphone and record player inputs for public address.

RCA's Porto-Arc Projector incorporates the superior professional features and top-quality workmanship of the famous "400" projector. These include dependable operation... "thread-easy" film path... the time-proved "400" mechanism.

This rugged and completely portable 16mm projector disassembles into 5 easy-to-carry cases. It can be set up or taken

down in five minutes. The suitcase type projector stand has adjustable, non-slip legs and an elevating mechanism. It provides ample storage space for its legs, cable, carbons and other accessories.



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Stereoscopic Projection and Photography

This article examines some single-film methods of projecting 3-D, the beam splitter, sequential-frame and Vectograph, and then discusses projection problems of the now familiar double-film system used nationally in theatres.

III - History and Projection Techniques

By ROBERT A. MITCHELL

POLARIZED-LIGHT 3-D began in America with the exhibition of a Norling film at the New York World's Fair in 1939. This was shown *via* two projectors synchronized by a selsyn interlock. In 1940 J. A. Norling* produced and exhibited a 3-D film in Technicolor.

The Norling productions, however, were not quite the first in the field, though they were undoubtedly seen and enjoyed by a greater number of persons than any previous attempts at polarized-light motion-picture stereoscopy.

At the risk of evoking heated arguments, we herewith report that the October, 1952, issue of the German publication, *Bild und Ton* (Picture and Sound), published by Zeiss Ikon in Stuttgart, describes a stereoscopic color sound film exhibited in Berlin in 1937. In the Zeiss system of 3-D, the two pictures of the stereopair were placed on a single frame of 35-mm film, and projected through a lens that had been provided with deviation wedges and polarizing filters.

It is noteworthy that the German

technologists have concentrated almost exclusively on single-film variants of the polarized-light process, and are unable to foresee a commercial future for the double-film method. The present Zeiss 3-D process is a single-film, single projector system that makes use of optical beam splitters of special design. Both pictures of the stereopair are side-by-side on the same frame of film and projected through one machine.

However, since the projection beam-splitting attachment contains the polarizing filters, we wonder how the heat produced by the absorption of radiant energy by these filters is dissipated and prevented from damaging the optical components. We also wonder, with skeptical mind, to what extent screen illumination suffers with the Zeiss Ikon single-strip system.

Many projectionists and other motion picture technicians have wondered why "sequential frame projection," in which the left and right-eye images follow one another in rapid succession, cannot be used for 3-D showings. It might seem that a satisfactory illusion could be produced by this simple single-strip system. Such, unfortunately, is not the case.

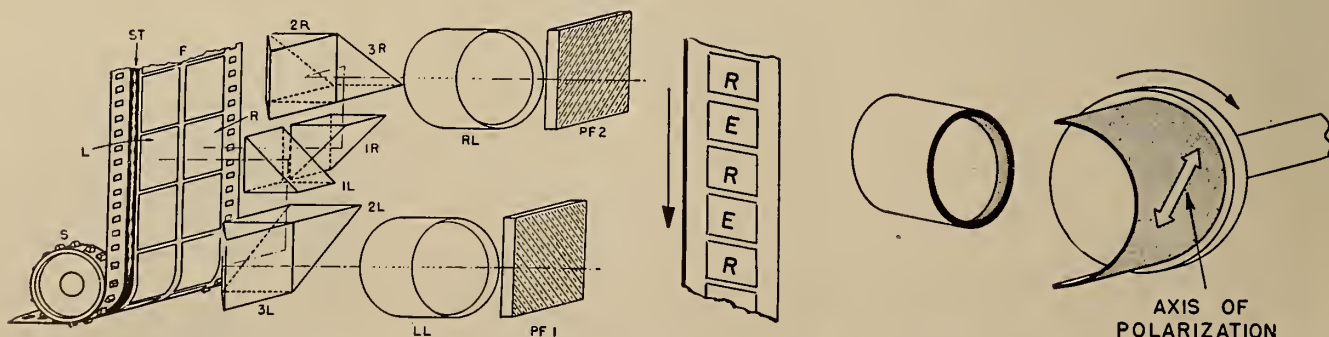
The flicker visible to each eye in sequential-frame 3-D is very great even when the rate of film-travel is doubled. The left eye receives no image all the time the right-eye picture is on the screen, and *vice versa*. The extended periods of darkness for each eye combine with the shutter cutoffs to produce an annoying irregular flicker.

But even worse than the flicker are the dizziness, headache, and nausea resulting from the rapid left-to-right and right-to-left "switch-overs" of vision. There is no escaping these disagreeable symptoms unless projection speed is stepped up to several hundred frames per second — an impractical expedient.

So much for the 2-strip, the "divided-frame," and the sequential-frame systems. We are now left with one more variant of the polarized-light 3-D process. This, the most fascinating of all, is the so-called Vectograph now being developed by the Polaroid Corporation.

As applied to motion-picture projection, the Vectograph method requires only one strip of special film and no filters of any kind over the projection lens.

* Mr. Norling is a pioneer in the field of stereo motion pictures. An article on the present Norling 3-D camera appeared in the June 1953 issue of *International Projectionist*.



Two methods of projecting stereoscopic motion pictures with only one strip of film are illustrated in the above diagrams taken from the article "Stereoscopic Motion Pictures," by John A. Norling, which appeared in *IP* for February 1952. On the left is shown a beam-splitter system similar in principle to the Zeiss Ikon method to which Mr. Mitchell refers. The two images of the stereopair are placed next to each other on the same film frame. The two images are also turned on their sides so as to fill the entire frame while retaining their height-to-width proportions. When projected through the prism system, the images are turned right side up and each is directed to a separate lens

and Polaroid filter. The numbers and letters in the diagram trace the passage of the images from the film through the prisms. The diagram on the right describes the sequential-frame method of projecting 3-D, which places left and right images on successive frames of the same film strip. A revolving polarizing filter synchronized with the projector movement changes its axis of polarization by simply revolving. This system is simple but, so far, of no commercial value because of the resulting eye strain. On page 12 a diagram illustrates an experimental single-strip 3-D system known as Vectograph. This method may shortly become very important in the battle of the new processes.

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VOLUME OF LIGHT DEMANDED
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Designed to burn 10mm "Hitex" carbons at 135 amperes, or 11mm regular carbons at 120 amperes for maximum light on wide screens. For the full hour running period of 5000-foot 3-D reels, the 10mm "Hitex" can be burned at 120 amperes, or the 11mm regular carbons can be burned at 115 amperes.

The color value and intensity of the light at the screen is maintained constant throughout a full trim, without the need of manual adjustment, by an automatic arc crater positioner.

National's new Reflect-O-Heat Unit permits a great increase in light at the screen without a corresponding increase in heat at the aperture.

Positioned in the path of the light beam, the Reflect-O-Heat Unit passes the visible light while diverting the heat rays back into the lamphouse from which it is removed through the lamphouse draft stack.

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The Vectograph film is double-coated, having emulsion on each side. The right-eye image is printed on one side of the film, and the left-eye image on the other. Special processing converts the silver images to clear light-polarizing images. The darkest areas in the picture polarize light almost completely, the gray areas partially, and the lightest areas only very slightly or not at all.

The secret of the Vectograph lies in the fact that the axes of polarization of the superimposed left and right images are crossed at right angles. The result on the screen is exactly the same as that obtained by the present 2-projector setup — *except that there are no light losses due to Polaroid filters over the projector lenses.* The audience, however, is still required to don Polaroid glasses in order to view the picture in three dimensions.

There have been two serious drawbacks to the Vectograph, at least up to now. First, it is rather expensive, not in line with the price-structure of release-print costs. Second, "wrong-eye" ghost images are more troublesome than in the present 2-strip method.

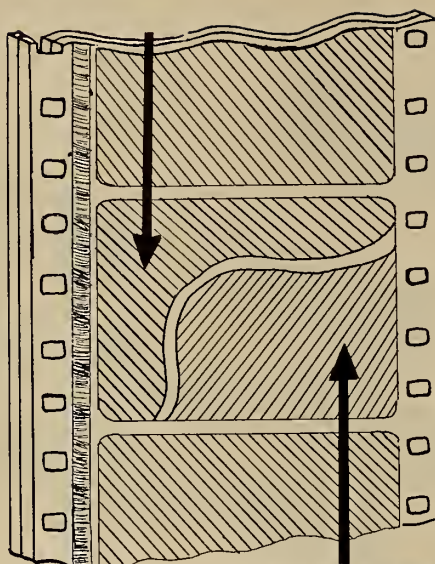
Two-Strip Method

There's no denying that the present 2-strip stereoscopic projection process requiring two synchronized projectors is a cumbersome makeshift. This unsuitable process was introduced simply because it is the easiest way for the producer to bring 3-D pictures to the ultimate consumer, the theatre patron.

A more professional process, such as the Zeiss Ikon single-film system, similar in most respects to the process championed in the United States by Nord, involves serious picture-illumination and filter-heating problems. The use of a single *wide* film, requiring special projector mechanisms and soundheads, would be an expensive risk so long as the public views 3-D with faintly amused indifference.

At any rate, the flame of novelty is still burning, and many of the projectionists who have not yet encountered 3-D will soon have the opportunity to try their hand at it. There is nothing mysterious about stereoscopic projection either in principle or in practice — though the practice is a bit of a nuisance when it involves two picture films which must be run in exact synchronism, maintained in proper register on the screen, and provided with

LEFT EYE IMAGE



RIGHT EYE IMAGE

Above is a simplified drawing illustrating the principle of the experimental Vectograph motion picture system. It would require only one projector because the two images of the stereopair are placed on the same film-frame — one in the front and one on the back of the film.

equal illumination at all times. It is easy to see that the projectionist enters very intimately into the process, and that inattention to any one of the many details of technique could easily ruin the whole show.

What 3-D Requires

Well, let's begin at the beginning. The average theatre has a projection installation consisting of two projection machines, a sound system, and one or more motor-generators or rectifiers to supply the arc-lamps with power. The projector magazines, rewinder set, and film cabinets are made to accept reels of 2000-foot capacity. The lenses are probably old-style uncoated ones, possibly a trifle scratched; and the screen is likely to be matte white. And now 3-D comes along. What new equipment will have to be purchased? Which components of the present "orthodox" equipment will have to be changed?

The projector magazines, rewinder, and film cabinets all require replacement. Standard 2000-foot reels are nearly 15 inches in diameter, and hence are accommodated by 16 and 18-inch film magazines. But 3-D reels hold up to 5000 feet of film (for 50 to 55 minutes of continuous showing) and are 24 inches in diameter. For these larger reels the following are needed:

Two 25-inch upper magazines with reel-end alarms.

Two 25-inch lower magazines with take-up gearing.

One rewinder for 24-inch reels (if the old rewinder cannot easily be blocked up).

One film cabinet big enough to hold at least six 24-inch reels.

In theatres where a steep projection angle exists, it may be necessary to purchase two upper-magazine tilt-blocks in order that the upper magazine tip back and clear the front wall of the projection room. If there is a clearance of at least a foot between your present 16-inch upper magazines and the front wall — or 10 inches of clearance if 18-inch magazines are used, — the tilt-blocks will not be necessary.

Placing Projectors

Moving the projectors back a few inches to provide the necessary clearance may necessitate a slight lowering of the projector port-holes.

It should be noted that certain old-style projector bases cannot accommodate the larger lower magazines. These must be replaced by regular pedestal-type bases, and the soundhead and projector-mechanism drive-gearing will likewise have to be modernized.

The next item, the interlock equipment which insures synchronous operation of the two projectors, demands the most careful consideration. To "economize" by installing a homemade interlock is the surest way of inviting serious trouble. Factory-made mechanical interlocks work quite well; but because the revolving cross-shaft connecting the two projectors is fitted to gear-reduction boxes mounted in front of the soundheads, installation difficulties are almost insuperable when control cabinets, switchboards, amplifying equipment, etc. are mounted on the front wall between the projectors.

The cross-shaft is from 25 to 35 inches above the floor, depending on the projection angle, and from 5 to 15 inches from the front wall. This shaft is fitted with universal joints at both ends for smooth, vibration-free running, and is of the proper length when the distance between the projection-lens centers is 6 feet or slightly less. For shorter distances the sleeve in the middle of the shaft should be removed and equal amounts sawed off the two halves of the shaft. The shaft sleeve should then be replaced and tightened only after the gear-boxes are in their final positions.

(Continued on page 33)

SOME STRAIGHT TALK ON 3-D AND WIDE SCREEN PROJECTION

"How much *more* light do I need for my new movie system?" That's the question everyone's asking today. Now is the time for specific, *factual* data on light requirements for 3-D and expanded screen projection.

With this need in mind, research and development engineers of National Carbon Company have collaborated on a treatise on screen light for the new motion-picture systems.

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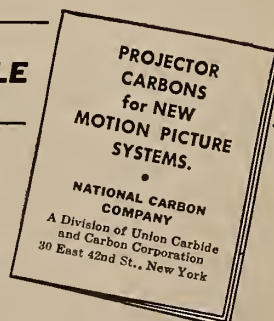
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Highlights of the SMPTE Fall Convention

By FREDERICK HODGSON

THE 74th semi-annual convention of the Society of Motion Picture and Television Engineers (October 5th to 9th inclusive) closed in New York amid a general feeling of optimism for the future of the film industry. Possibly due to conflicting dates, such as the hectic meetings of the Allied States theatres in Boston, attendance was somewhat below normal in spite of the fact that this was the first SMPTE convention since the new developments avalanche really began to roll.

Among the engineers the consensus was this: "Cinerama? 3-D? CinemaScope? Heck, we aint seen nothin' yet!"

Backing up that sort of thinking was Twentieth Century-Fox's Earl Sponable who announced plans for showing CinemaScope in drive-ins on a 135-foot screen. At the Fox aspect ratio of 2.55 to 1, that means a screen almost 55-feet high. One engineer almost swallowed his pipe. Others just gasped.

The buzz-buzz in the corridors went this way:

Fox is responsible, with its four-track single-film magnetic sound, for reproducer redesign. Responsible, too, for a new era in screens with the lenticulated Miracle Mirror, Astrolite and others. Also for violent changes in projection lighting.

And now, Detroit may have to redesign automobiles!

How, went the questions, will a couple in the back seat of a low-slung 1954 sedan see the top of a 55-foot drive-in screen? Or does a couple in the back seat of a sedan give a damn about the screen anyway?

To supply the terrific amount of light needed for a 135-foot screen a new and powerful lamp, using principles new to motion picture projection, was displayed. The lamp, which has a blown arc, has a magazine feed for the positive carbons, burning them up quickly and automatically replacing them like bullets sliding into the firing chamber from the

(Continued on page 28)

SMPTE Reports on Theatre Survey

HOTTEST ITEM on the agenda of the 74th semiannual convention of the Society of Motion Picture and Television Engineers was the report, presented by Ben Schlanger, on the Society's theatre survey. The report indicated that difficulty will be encountered if extremely wide screens are to be fitted into a great majority of American theatres.

In considering the figures given in the following article it must be remembered that there are over 16,000 theatres in the country and that the SMPTE study is based on less than 400 of these. In the opinion of IP, this is too small a sampling upon which to reach any really accurate conclusions.

Mr. Schlanger, chairman of the SMPTE's Theatre Engineering Committee, stressed two things in making his report, the small number of theaters included in the study and the fact that the Society was simply presenting the figures and was not drawing any conclusions.

The theatre survey report was compiled from statistics taken from returned questionnaires that were sent to theatre owners by the SMPTE last May. Replies were analysed by the Motion Picture Association of America. In compiling the report, Mr. Schlanger and the

theatre engineering committee divided the theatres into three groups: Group I consisted of theatres with a seating capacity of 500 or less; Group II consisted of theatres with a seating capacity of 501 to 1,500; and Group III consisted of theatres with a seating capacity of over 1,500.

350 Theatres Checked

Of the 8,000 theatres where questionnaires were received, only 400 responded with the filled out form, and of these about 50 had to be discarded. The survey, therefore is based on approximately 350 theatres.

Among other things, each theatre owner was asked in the questionnaire to give maximum available screen height, maximum available screen width, and maximum viewing distance (the distance from the screen to the furthest seat in the house).

From this information the committee compiled statistics which indicate that in theatres in Group I (up to 500 seats), the average maximum picture height available is 14 feet, 8 inches. In Group II (501 to 1,500 seats), the average available height is 19 feet, 2 inches. In Group III (over 1500 seats), it is 21 feet, 6 inches.

The information on available screen

height, when considered together with the information on available picture width, provided the committee with figures for the average aspect ratio available at theatres in each group.

In Group I, the largest available aspect ratio ranged from 1.5 to 1 up to 1.87 to 1 for an average of 1.7 to 1. In Group II, it ranged from 1.81 to 1 up to 2.16 to 1 with an average of 1.9 to 1. In Group III, it ranged from 2.06 to 1 up to 2.30 to 1, for an average of 2.2 to 1. In presenting the report, Schlanger pointed out that these aspect ratios were based on the use of all available screen height. By using less than the available screen height. By using less than the available screen height, a theatre can obtain a large aspect ratio.

Of the theatres contacted in Group I (houses of 500 seats or less), 18% replied. In Group II (houses of 501 to 1500 seats), 46% responded. In Group III (over 1500 seats) 36% responded. According to Motion Picture Association of America statistics, 51.9% of all theatres in the United States are in Group I, 42.5% are in Group II, and 5.6% are in Group III.

The questionnaire asked theatre owners if they had already converted to wide-screen projection and whether they planned to do so this year, or if they have no intention of doing so.

In Group I, 3.6% said that they had

converted. In Group II, 6% had converted, and in Group III, the figure was 13.6%. The overall average of those already converted to wide-screen was 7.4%.

In Group I, 40% said they plan to convert to wide-screen this year. In Group II, 68% said the same, and in Group III, 59.3% will convert. Altogether, 59% of those responding said they were planning to convert to wide-screen this year.

In Group I, 56% said they do not plan to convert to wide-screen this year, while the figure for Group II was 26%, and for Group III it was 27%. A total of 33.5% of the theatres replied that they do not plan to convert to wide-screen this year.

Conversion to 3-D

Another question to theatre owners was whether or not they had already converted to 3-D and whether they planned to do so this year, or if they have no intention of doing so.

In Group I, 14.5% said they have already converted to 3-D. In Group II, the figure was 49%, and in Group III, 88% said they had already converted. According to the survey 51% of all theatres responding have already converted to 3-D.

In Group I, 11% of those responding said that they plan to convert to 3-D this year. In Group II the figure was 21.5%, and in Group III, 8.5% plan to do so. A total of 15.6% of the theatres said they are planning to convert to 3-D this year.

In Group I, 74.6% of the theatres said they have no intention of converting to 3-D this year; the same was true for 29.3% of the Group II responses; and in Group III, the figure was 3.4%. A total of 33.5% of the theatres said they do not plan to convert to 3-D this year.

Mr. Schlanger noted that a number of exhibitors who stated that they do not plan to convert to 3-D indicated that they were waiting for a single-projector system.

ABSTRACTS OF PAPERS

Following are abstracts of some of the technical papers read at the SMPTE convention that are of special interest to those in the projection field:

PERFORMANCE OF HIGH-INTENSITY CARBONS IN THE BLOWN ARC

C. E. GREIDER

National Carbon Co., Cleveland

The performance of carbons operated in the Gretener-type of blown arc shows the following advantages as compared with the more usual method of burning: (a) from 5 to 20% less current is required to produce the same light; (b) at the higher brightness levels, less carbon consumption is required

28 Receive Honors at SMPTE Session

Presentation of awards for technical achievements in the motion picture art was an important feature of the SMPTE's semiannual convention at the Statler Hotel in New York City. The Progress Medal Award was received by Fred Waller, of Cinerama, Inc., for his work in developing the Cinerama process.

The SMPTE Journal Award for a technical paper published by the society was made to R. L. Spottiswoode, N. L. Spottiswoode and Charles Smith for a paper titled "Basic Principles of the Three-Dimensional Film."

Honorable mention was given Willy Borberg for his paper on "Modulated Air Blast for Reducing Film Buckle;" to C. R. Carpenter and L. P. Greenhill for "A Scientific Approach to Informational-Instructional Film Production and Utilization;" to G. C. Higgins and L. A. Jones for "Nature and Evaluation of the Sharpness of Photographic Images;" and to Otto H. Schade for "Image Gradation, Graininess and Sharpness in Television and Motion Picture systems". Special mention was made of Norman

for the same light; (c) the maximum light that the carbon will deliver is increased by 10 to 20%; and (d) uniformity of brightness across the face of the arc crater is considerably improved.

The performance advantages of the blown arc seem to be considerably greater for 12-mm than for 10-mm carbons, and are greatest when the carbon is operated at or near its maximum current and light output. The addition of blowing to the arc introduces special problems regarding the design and operation of the negative electrode.

FERRITE-CORE HEADS FOR MAGNETIC RECORDING

R. J. YOUNGQUIST and W. W. WETZEL
Minnesota Mining and Mfg. Co.

The low abrasion resistance of high permeability nickel iron alloys has been recognized as one limitation to their use as core material in magnetic recording heads. Ferrites have been considered as possible abrasion-resistance substitutes for the soft alloys. However, the brittleness of this ceramic has been considered as a limitation to the formation of fine, well-defined head gaps. It will be shown that effective gaps of 0.0005 in. or less may be obtained and that such heads are definitely suitable for motion-picture applications.

NEW 35-MM TELEVISION FILM SCANNER

EARNEST H. TRAUB
Philco Corp., Philadelphia

The paper discusses the background against which this development was undertaken in terms over presently existing equipment. The film transmission problem for

Collins and T. C. MacNamara for "The Electronic Camera in Film-Making."

The Samuel L. Warner Memorial Award was presented to Dr. W. W. Wetzel, of the Minnesota Mining & Manufacturing Company who has been developing a more durable magnetic pickup for the new projection sound-heads.

Fellowships in the society were awarded to Merle H. Chamberlin, supervisor of projection for M-G-M; LeRoy M. Dearing, Technicolor Motion Picture Corp.; Russell O. Drew, RCA Victor; Carlos H. Elmer, U. S. Navy; Frank N. Gillette, General Precision Laboratory.

Also to Gerald G. Graham, National Film Board of Canada; Sol Halprin, 20th Century-Fox; A. V. Loughren, Hazeltine Corp.; Ralph E. Lovell, National Broadcasting Co.; Arthur J. Miller, Republic Pictures Corp.; John W. Service, National Theatre Supply; Kenneth Shaftan, J. A. Maurer, Inc.; R. J. Spottiswoode, Stereo Techniques, Ltd.; Charles L. Townsend, NBC, and T. G. Veal, Eastman Kodak Co.

both black-and-white and color is then restated in fresh terms. This in turn points to a philosophically new set of solutions involving a combination of known and new elements. They comprise (1) nonstorage flying-spot scanning technique, (2) continuous exposure, and (3) continuous film motion combined with optical compensation.

Of these elements, the optical compensator proves to be the key to the whole problem. A new form of optical compensator is then discussed which is both small and simple and which in turn provides the possibility of new and elegant solutions for film-shrinkage correction and iso-film-transport. The new optical compensator is corrected for various aberrations and has good optical efficiency. A color television film scanner incorporating these features is described.

NEW PORTABLE 16-MM ARC PROJECTOR ADAPTED FOR 3-D PROJECTION

A. J. CARDILE and J. J. HOEHN
RCA Victor Div., Camden, N. J.

A new portable arc projector for 16-mm film, consisting of five luggage-type units and its modification for 3-D is described.

BASIC PRINCIPLES OF STEREOPHONIC SOUND

W. B. SNOW
Acoustics Consultant, Los Angeles

Stereophonic sound has suddenly become of vital importance to industry. The subject has been studied for many years, but the published material is scattered. This paper summarizes the fundamental theory under-

(Continued on page 24)

● Manna and Sour Grapes

CinemaScope Wrecks Records

By JAMES MORRIS

THE HEADLINE of the lead article in September's *International Projectionist* asked the question: "Does CinemaScope have the answer?" Since that time, "The Robe", photographed in the 20th Century-Fox anamorphic-lens CinemaScope system has opened with tremendous ballyhoo at the Roxy in New York, Grauman's Chinese in Hollywood and in many other large-city theatres. Newspaper critics have been enthusiastic, the public has responded in droves, and record-breaking grosses have been taken in wherever the picture has played.

However, it is still too early to tell just how important CinemaScope and similar systems such as WarnerScope will be in the future of motion pictures. Only the public can give a final verdict, and that will come only after several pictures are made in CinemaScope — when it can no longer attract on the basis of being new or unusual.

To put it bluntly, as rival Hollywood producers have done, there is no doubt that 20th Century-Fox hit on an unusually successful combination of theme and presentation in this first film, but there is still the difficult task of producing equally successful subsequent releases. There is also some speculation within the industry as to whether the public is going for "The Robe," the CinemaScope system, or the tremendous Fox publicity campaign.

"Sour Grapes"

It is highly possible, as Fox claims, that "sour grapes" have something to do with the above reactions. "The Robe" is making a lot of money and it has been praised unanimously wherever shown. However, no new system can be perfect from the start and improvements are often the result of sound criticism. That is why this article at first glance may seem to take a negative rather than a positive view of the new system.

A cautious but constructive attitude was taken by Bosley Crowther, film critic of the *New York Times*, when he described CinemaScope as follows:

"It is essentially a sweeping display of colorful settings and costuming on a unique pictorial scale. Rome in its days of mighty empire, Jerusalem in its early Christian years and the Holy Land in its ageless dusty primitiveness have never loomed larger on the screen. Neither have human faces been more frankly or closely surveyed than in the magnifications that go by the name of close-ups in this film."

"Plainly," Mr. Crowther continued, "the size of this canvas invites panoramic artistry, and it is obvious that some marvelous outdoor pictures may be made for projection on it. 'Ivanhoe,' for instance, or a first-class western film, such as 'Stagecoach' or 'Fort Apache,' would be tremendous on this screen. Conversely, it is apparent that intimate personal drama may be lost in such insistent and inflexible large-framing."

In a talk with IP shortly after his article appeared, Mr. Crowther went further in expressing his feelings about CinemaScope and other methods of projection on an extremely wide screen. Because he is perhaps the nation's foremost film critic and in an excellent position to judge new motion picture techniques independently and without prejudice for their entertainment value, his opinions are important.

"I don't like to see motion pictures tied to any particular size or aspect ratio," he stated, adding that he understood that theatre architects had been advocating a flexible screen for years.

Mr. Crowther's ideas concerning the flexible screen may well be the soundest approach to the problem of getting more people back into theatres and re-establishing the movie habit. The public has shown that it likes variety. It flocked to 3-D pictures for a long time despite inferior productions, it is interested in stereophonic sound, and it is now flocking to see "The Robe" in CinemaScope. A theatre equipped to show CinemaScope or the similar WarnerScope system, to show interesting and intimate films in the old-fashioned standard way, and to show stereo 3-D also,

may well be a theatre that will not only survive but prosper in the future. Stereophonic sound is another important drawing card.

According to trade paper reports from the West Coast, the feeling of many Hollywood production executives is much the same. A question frequently asked out there is: "What would happen if all theatres were converted to CinemaScope?" According to a report in *Variety*, the answer depends on the impression that the giant "Robe" boxoffice take has made on the person queried. Some believe that CinemaScope should be applied only to a few spectacle types of film. Others believe that it is good for any kind of story.

A third group is inclined to believe that a complete switch to CinemaScope would have tragic results. "In a year or so we would be right back where we started from," one executive complained. "Every house would advertise huge wide screens and the public would be bored by it all. You can't save the industry with a gadget. It's good films that are needed. Nothing else."

Larger Aperture

For the projectionist, who has to cope with the problem of getting enough light on the screen to illuminate the large, wide picture required by CinemaScope, the system has one very important and helpful feature that has not been sufficiently publicized. This is the fact that the projection aperture for CinemaScope film is considerably larger than the conventional 3 by 4 aperture plate. The spreading action of the cylindrical segments of the anamorphic lens makes possible the use of a larger and more nearly square aperture plate despite the great width of the resulting picture on the screen.

For instance, compare the CinemaScope aperture plate to the plate required to obtain a wide-screen picture of 2 to 1 dimensions by means of a shorter focal-length lens. Dimensions of the CinemaScope aperture are 0.912 inches x 0.715 inches, giving a total area of 0.652 inches. The dimensions of a masked aperture plate to give 2 to 1 proportions to a conventional film would be 0.825 inches x 0.412 inches, giving a total area of 0.340 inches, just a little more than half of the CinemaScope aperture, and

(Continued on page 31)

Lens Chart for Wide Screens

By M. D. O'BRIEN

Director of Projection and
Sound for Loew's Inc.

THE rush to install wide-screen projection systems in theatres around the country often has resulted in confusion over the type and size of the equipment required.

This office constantly receives queries such as the following: What focal-length lens is needed to get, for example, a 40-foot picture in a theatre where the throw is 125 feet and the proscenium arch is 20 feet high. The catch here is that with a 40-foot wide picture in such a theatre, all pictures would have to be shown in an aspect ratio of at least 2 to 1. There-

fore a compromise must be made.

To answer questions of this kind quickly and, at the same time, accurately, I prepared the chart shown on this page. It may be interesting to projectionists who are helping to set up wide-screen systems.

The chart is divided into two parts. Let us consider the upper half first. If, for instance, a projectionist wants to know what focal-length lens would be required to obtain a picture 40-feet wide in his theatre if the throw is 125 feet, he can find out by reading down the left-hand column to 125 feet and

then reading across to the column listing lenses for a 40-foot screen.

There he will find that a 2.6-inch lens would be needed to get exactly this size picture in this particular situation. However, since projection lenses are generally available only in quarter-inch sizes, exactly this size picture cannot be obtained. It would be necessary to compromise on a slightly larger picture using a 2.5-inch lens or a slightly smaller picture using a 2.75-inch lens.

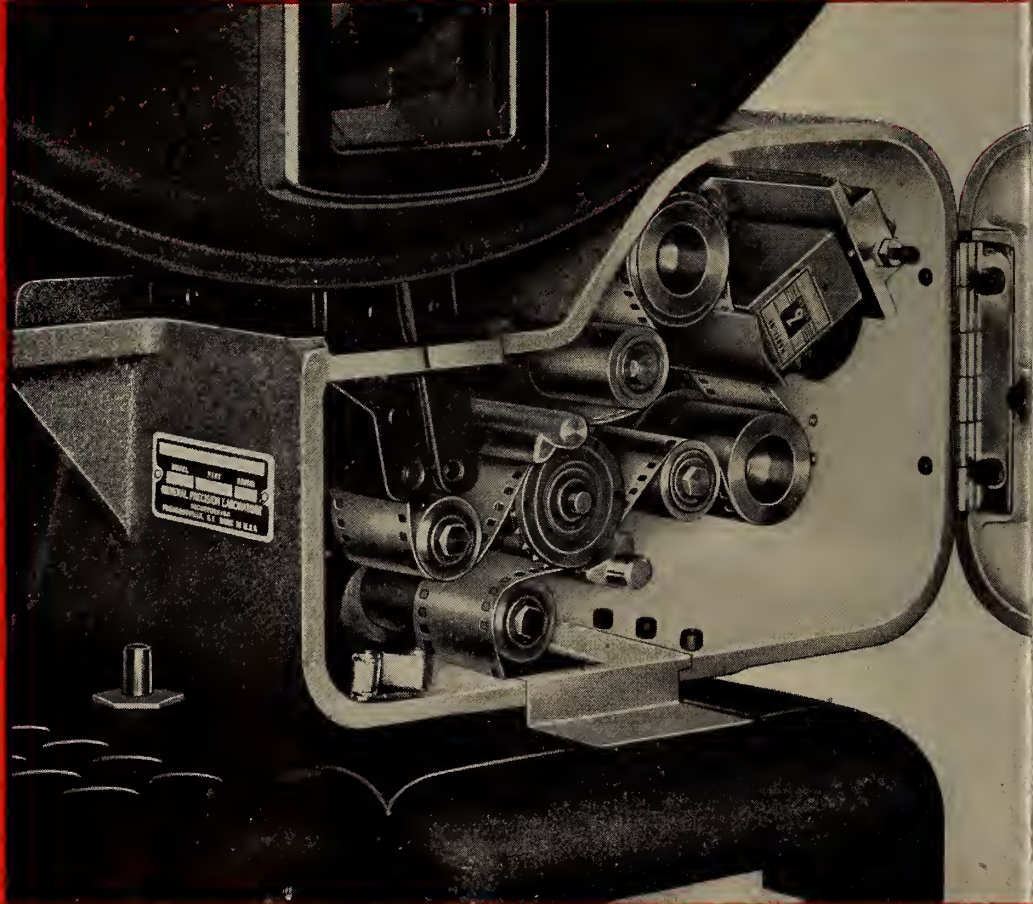
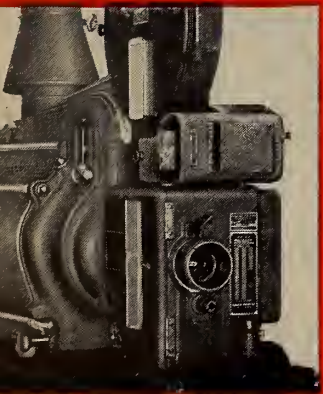
The bottom section of the chart determines the height of a picture of a specified width when various aspect ratios are used. It is useful in coping with situations such as the following: As I mentioned above, a picture 40-feet wide in a theatre where the proscenium arch is only about 20 feet high, would result in a situation where all pictures would have to be shown in an aspect ratio of at least 2 to 1, and few pictures are now available that can be masked that much at the aperture without cutting off action.

In the upper right-hand corner of the top chart is a box listing the aperture sizes required to project various aspect ratios. Extreme ratios such as 2.66 to 1 or 2.5 to 1 are included although at present they probably are not feasible. The light loss and, of course, the fact that large sections of the picture would be cut off would make such projection impractical. Height-to-width ratios as extreme as this are obtained in the CinemaScope process through using a full aperture and an anamorphic lens.

THROW	SCREEN WIDTHS															
	20'	22'	25'	27'	30'	35'	37'	40'	42'	45'	47'	50'	52'	55'	37'	40'
50	2.1	1.9														
55	2.3	2.1														
60	2.5	2.3	2.0													
65	2.7	2.5	2.2	2.0												
70	2.9	2.6	2.3	2.1	1.9											
75	3.1	2.8	2.5	2.3	2.1	1.9										
80	3.3	3.0	2.6	2.4	2.2	2.1	1.9									
85	3.5	3.2	2.8	2.6	2.3	2.2	2.0	1.9								
90	3.7	3.4	3.0	2.8	2.5	2.3	2.1	2.0	1.9							
95	3.9	3.6	3.2	2.9	2.6	2.4	2.2	2.1	2.0	1.9						
100	4.1	3.8	3.3	3.1	2.8	2.6	2.4	2.2	2.1	2.0						
105	4.3	3.9	3.5	3.2	2.9	2.7	2.5	2.3	2.2	2.1	1.9					
110	4.5	4.1	3.6	3.4	3.0	2.8	2.6	2.5	2.3	2.2	2.0	1.9				
115	4.7	4.3	3.8	3.5	3.2	3.0	2.7	2.6	2.4	2.3	2.1	2.0	1.9			
120	5.0	4.5	4.0	3.7	3.3	3.1	2.8	2.7	2.5	2.4	2.2	2.1	2.0	1.9		
125	5.2	4.7	4.2	3.8	3.4	3.2	2.9	2.8	2.6	2.5	2.3	2.2	2.1	2.0	1.9	
130	5.4	4.9	4.3	4.0	3.6	3.4	3.1	2.9	2.7	2.6	2.4	2.3	2.1	2.0	1.9	
135	5.6	5.1	4.5	4.1	3.7	3.5	3.2	3.0	2.8	2.7	2.5	2.4	2.2	2.1	2.0	1.9
140	5.8	5.3	4.6	4.3	3.9	3.6	3.3	3.1	2.9	2.8	2.6	2.5	2.3	2.2	2.1	1.9
145	6.0	5.4	4.8	4.4	4.0	3.7	3.4	3.2	3.0	2.8	2.7	2.5	2.4	2.3	2.2	2.1
150	6.2	5.6	5.0	4.6	4.1	3.9	3.5	3.3	3.1	2.9	2.8	2.6	2.5	2.4	2.3	2.1
155	6.4	5.8	5.2	4.7	4.3	4.0	3.7	3.5	3.2	3.0	2.8	2.7	2.6	2.5	2.3	2.2
160	6.6	6.0	5.3	4.9	4.4	4.1	3.8	3.6	3.3	3.1	2.9	2.8	2.6	2.5	2.4	2.2
165	6.8	6.2	5.5	5.0	4.5	4.2	3.9	3.7	3.4	3.2	3.0	2.9	2.7	2.6	2.5	2.3
170	7.0	6.4	5.6	5.2	4.7	4.4	4.0	3.8	3.5	3.3	3.1	3.0	2.8	2.7	2.6	2.5
175	7.2	6.6	5.8	5.3	4.8	4.5	4.1	3.9	3.6	3.4	3.2	3.1	2.9	2.8	2.6	2.5
180	7.4	6.8	5.9	5.5	5.0	4.6	4.2	4.0	3.7	3.5	3.3	3.2	3.0	2.9	2.7	2.6
185	7.6	6.9	6.1	5.7	5.1	4.8	4.4	4.1	3.8	3.6	3.4	3.2	3.1	2.9	2.8	2.7
190	7.8	7.1	6.3	5.8	5.2	4.9	4.5	4.2	3.9	3.7	3.5	3.3	3.1	3.0	2.9	2.8
195	8.0	7.3	6.4	6.0	5.4	5.0	4.6	4.3	4.0	3.8	3.6	3.4	3.2	3.1	2.9	2.8
200	8.2	7.5	6.6	6.1	5.5	5.2	4.7	4.4	4.1	3.9	3.7	3.5	3.3	3.2	3.0	2.9

The two sections of this chart help in determining how well a theatre can be adapted to wide-screen projection and also aid in determining the size of the shorter focal-length lens required. The upper section shows the size of the lens needed to obtain a screen of any desired width at any projection throw. The section below indicates the height to 1/10th of a foot of the screen in relation to its width and the aspect ratio. Figures shown below on top of each column stand for aspect ratios.

Width	1.50	1.66	1.75	1.78	1.85	2.00	2.25	2.50	2.66	STANDARD
20	13.3	12	11.4	11.2	10.8	10.0	8.9	8.0	7.6	14.5
22	14.6	13.2	12.6	12.4	11.9	11.0	9.8	8.9	8.5	16.0
25	16.6	15	14.0	14.0	13.5	12.5	11.1	10.0	9.4	18.1
27	18.0	16.2	15.4	15.2	14.6	13.6	12.0	10.8	10.1	19.6
30	20.0	18	17.1	16.9	16.2	15.0	13.3	12.0	11.3	21.8
32	21.3	19.2	18.0	18.0	17.3	16.0	14.2	12.8	12.0	23.2
35	23.3	21	20.0	19.7	19.3	17.5	15.6	16.0	15.2	25.4
37	24.6	22.2	21.1	20.8	20.0	18.5	16.4	14.8	13.9	26.9
40	26.6	24	22.6	22.5	21.6	20.0	17.8	16.0	15.2	29.0
42	28.0	25.3	24.0	23.6	22.7	21.0	18.7	16.8	15.7	30.0
45	30.0	27.1	25.8	25.3	24.3	22.5	20.0	18.0	16.9	32.6
47	31.3	28.3	26.9	26.4	25.4	23.5	20.9	18.8	17.7	34.0
50	33.3	30	28.6	28.1	27.0	25.0	22.2	20.0	18.8	36.1
52	34.6	31.3	29.7	29.2	28.1	26.0	23.1	20.8	19.5	37.8
55	36.6	33.1	31.4	30.9	29.8	27.5	24.4	22.0	20.8	40.0
57	38.0	34.3	32.6	32.0	30.8	28.5	25.3	22.8	21.4	41.4
60	40.0	36.1	34.2	33.7	32.4	30.0	26.7	24.0	22.6	43.6
62	41.3	37.3	35.4	34.8	33.5	31.0	27.6	24.8	23.3	45.0
65	43.3	39.1	37.1	36.5	35.1	32.5	28.9	26.0	24.4	47.2



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IN THE SPOTLIGHT

NEW five-year contracts recently signed between Chicago Local 110 and exhibitors in the Chicago area provide for progressive yearly increases in the exhibitors' contributions to the Union's Welfare Fund. For the first year of this pact, which became effective September 1, 1953, the exhibitors are required to pay into the fund the equivalent of an 18% wage increase, per man; the equivalent of a 22% wage increase, per man, for the second year; 26% for the third year; 30% for the fourth, and 30% for the fifth years. For example, for each man earning a gross salary of \$125 per week, the exhibitor's contribution to the Fund will amount to \$22.50 per week for the first year; \$27.50 per week for the second year; \$32.50 per week for the third year; and \$37.50 per week for the fourth and fifth years.

Other benefits covered in the new contracts call for the elimination of midnight shows in a number of theatres at no reduction in pay, and double-time when pictures are shown after 12 o'clock midnight.

Chicago Local 110 blazed the trail back in 1948 with the first labor-management participation welfare fund in theatrical history. It was the forerunner of similar agreements now in force in a number of IA Locals. The fund is administered by an equal number of representatives of Local 110 and the exhibitors. Eugene Atkinson, business representative, and Clarence Jalas, secretary, headed the committee representing the union at the negotiations.

- Los Angeles has been selected as the AFL convention city for 1954, and Chicago for 1955. These cities were selected by the delegates to the recent 72nd annual AFL convention in St. Louis.

- The untiring efforts of Hugh J. Sedgwick, IA 8th vice-president and member of Local 303, Hamilton, Ont., were rewarded last month when the

Canadian Labour Relations Board certified the IA as bargaining agent for the Tv technicians of the Canadian Broadcasting Company.

- Carl G. Cooper, IA 5th vice-president, was unanimously elected president of the Hollywood AFL Film Council, succeeding Roy Brewer who resigned last month.

- Rounding out 48 years of service to the motion picture industry, Joe Cifre, member of Boston Local 182 and head of Joe Cifre, Inc., well known theatre equipment supply house, is retiring from all business activities and, with his wife, plans to take an extended vacation. Feeling physically fit and having the wherewithall, Joe feels that the time has come when he can sit back a bit and take things easy. More power to him, we say, and we hope that both Joe and Marian Cifre find the enjoyment in their leisure that they are looking for.

Joe Cifre's career began back in 1905 when as a lad of 14 he worked in his father's nickel movie show in Boston. He later worked in a number of the theatres in and around Boston and

in 1911 he joined Local 182. Later he started on a series of road shows which kept him occupied for several years. In 1917 he was made chief projectionist at the old Castle Square Theatre in Boston and there he installed and managed the first de luxe projection room in New England. That same year he was elected president of Local 192. Tiring of work in the projection room, Joe entered the theatre equipment field and in 1935 he organized his own independent company, Joe Cifre, Inc.

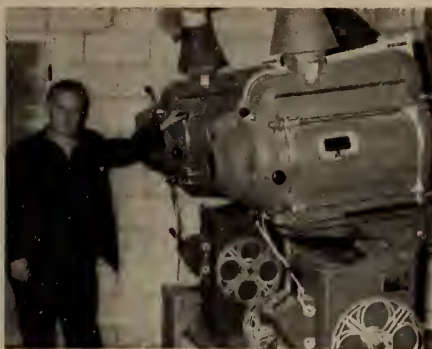
The famous "Jimmy Fund" of the Children's Cancer Foundation is Joe's brain child. Since its inception in 1948, this fund has raised and spent about \$2.5 million in research and treatment of cancer in children. Under the auspices of the Variety Club, of which he is an active member, he has put on an average of 40 free 16-mm movie shows per month for the past 15 years for shut-ins in charitable institutions. After a much needed rest Joe plans to continue with his various philanthropic works.

- Local 604, Corpus Christi, Texas observed its 30th anniversary last month.

- Harry S. Spang, member of Local 398, Meadville, Penna., recently celebrated his 45th year as a projectionist. He started his projection career back in 1908 when at the age of 16 he ran pictures at the Baldof Theatre in Pittsburgh. Several years later he moved on to Keystone, W. Va., and then to Uniontown, Penna., where he became



Representing the AFL at the recent Labor Day celebration held at Morgantown, W. Va., IA Representative Lawrence J. Katz (center) is here shown with a group of Local 578 officials. Left to right: August Defrere, vice-president; Mose Gottlieb, former business representative; Katz, H. D. Kelly, secretary, and Richard Herstine, business representative.



Harry Spang, member of Local 398, Meadville, Penno., in the projection room of the Lake-Side Drive-In Theatre where he has been employed for the past four years.

a member of Uniontown Local 208. In 1914 he transferred back to Pittsburgh Local 171 and for the next 22 years he worked in several of the larger houses there. For the past four years Spang has been employed at the Lake-Side Drive-In Theatre, near Conneaut Lake, which is in the jurisdiction of the Meadville Local. For a number of years he was associated with National Theatre Supply as installation supervisor.

In addition to his work as projectionist Spang operates a successful washing machine and vacuum cleaner repair shop in Meadville.

- In tribute to the memory of the late Thomas J. Shea, assistant IA president, engraved resolutions were presented to his widow and to Local 375, Middletown, Conn., of which he was a member. The presentations were made by Harland Holmden, who succeeded Shea, and William C. Scanlon, IA trustee.

- The 50th anniversary of Local 108, Geneva, N. Y., celebrated jointly on October 5th with the New York State Association of Motion Picture Projectionists which was marking its own Silver Jubilee, was a wing ding of an affair. Held at the beautiful headquarters of Winnek Post, American Legion, on the shores of Lake Geneva, the dual celebrations included a midnight steak dinner. The editor of IP was on hand and spoke briefly about some of the new developments now rocking the film industry.

During the dinner Local 108 presented a Gold Life Membership card to Jerry Fowler, member of the Local and now manager of the Schine Theatres. Ed Dougherty, Local 384, Hudson County, N. J., received a pen and

pencil set for his efforts on behalf of Local 108's *Journal*. Morris I. Klapholz, of New York, secretary of the 25-30 Club, and Ed Dougherty obligated Charles F. Wheeler, secretary-treasurer of Local 108, into the club. During the afternoon business session, with Earl Tuttle, Local 396, Binghamton, in the chair, a resolution was passed congratulating Adolph Zukor on his 50 years in the motion picture business.

- Theo. P. Hover, member of Local 349, Lima, Ohio, is very anxious to secure the following items which he believes may be found in some theatre junk pile: a variable transformer (G. E., Argus) of the type frequently used with a 900 watt, 30 V., 30 amp incandescent lamp—a projection lamp which used to be common in small theatres. He would like one that will operate with a line voltage of 220 volts, single-phase. Although there seems to be a large supply of the 110 V. units, Hover claims that the 220 V. type is scarce. He is also building a portable stage switchboard and would like to contact some of the theatres that are about to be shuttered for dinners, stage pickets, plugging boxes, spotlights, etc. Contact Hover direct in care of 410 Marian Avenue, Lima, Ohio, for further particulars.

- Charles Seifert, financial-secretary for Local 203, Easton, Penna., is chairman of the Easton Central Labor Union's Educational Committee, a post he has held for the past 20 years. For the past four years he has served as



Shown above is one of the outstanding floats taking part in the recent Labor Day celebration at Morgantown, W. Va. This float was conceived and built by members of IA Local 578.

secretary for the CLU in addition to acting as its labor representative on the Housing Authority. He receives no remuneration for these services except the satisfaction of serving his community.

Out-of-Town Visitors to IP.

- Michael (Mike) Ostrowsky, vice-president of Buffalo Local 233, visited New York for several days for the express purpose of seeing Cinerama and the CinemaScope picture, "The Robe." He said he was particularly impressed with CinemaScope and he considers it a boon to the motion picture industry.

Ostrowsky has been working in the projection room of the Lafayette Theatre for many years, and until several years ago he doubled as the Na-

(Continued on page 32)



Morris Klapholz (left), member of New York Local 306 and secretary of the 25-30 Club, presents a Club membership certificate to Charles F. Wheeler, secretary of Local 108, Geneva, N. Y., and of the New York State Projectionists Association. Edward Dougherty, past president of the 25-30 Club, is shown at the extreme right. The presentation took place at the recent joint celebration of the Geneva Local's 50th and the Association's 25th anniversaries.

Technical Puzzlers Clarified

By HENRY KOGL

Staff Engineer, SMPTE

IF LAST YEAR, people booted around terms like peripheral vision, convergence, divergence, stereopair, anamorphic, stereophonic, etc., we would suspect they were going highbrow on us. Today, these are more or less common terms in the trade. Very often it is assumed that these terms are well understood by all and are therefore too frequently used without adequate explanation.

With this thought in mind, your editor leafed through some of the back issues of IP and came up with a varied assortment of words which he thought you might like to find defined, all in one place, and then suggested I work them over once, lightly.

Before proceeding, I would like to make it very clear that I'm opposed to dictionary-type definitions, which are so brief and concise, they are likely to leave you in the same confused state of mind. I am therefore going to attempt to explain meanings rather than offer strict definitions.

ANAMORPHIC. This is a special optical attachment which when added to a camera produces a compressed image which appears as though it were photographed with a very wide angle lens in the horizontal direction and an ordinary lens in the vertical. A similar attachment, added to the projector, expands the horizontal (again like a very wide angle lens), maintains the vertical and thus produces the panorama effect of CinemaScope. (This was fully described in the June 1953 IP as the Hypergonar Lens Process.) It is obvious that the functioning of this attachment is critically dependent on its proper alignment so that the compression and expansion take place in the horizontal plane and no other.

BEAM SPLITTER. This is an optical device employed in certain suggested 3-D single film systems. When used on a camera lens it enables a single camera to photograph the two separate stereoscopic images side by side on a single film. The same device is then used on a projector to project the two images. It works just the way the name implies; by use of 2 pairs of mirrors or prisms it splits the light beams directed on the camera or projector lenses. One of the main reasons why the system is not used

commercially is because of the excessive light loss involved.

PERIPHERAL VISION. This is another term for side vision — or the amount one sees to each side when looking straight ahead. For most people this is somewhere around 170° or almost a semi-circle. The trend towards wider screens is therefore in the direction of more natural viewing in that it makes for greater use of peripheral vision than hereofore.

RCA Develops 16-mm Projector for 3-D

PORTABLE 16-mm arc projection equipment designed to use three-dimensional motion pictures for business and industry was demonstrated at the recent SMPTE meeting by RCA's Engineering Products Department. This new equipment brings to non-theatrical users the special advantages of three-dimensional films, with the same impact and life-like realism of depth and color characteristic of Hollywood productions, a company spokesman said. Documentary and industrial motion pictures filmed in 3-D are expected to provide American industry and educational institutions with a new and effective means of visually presenting its public relations, sales or training programs.

The new RCA equipment reproduces standard 16-mm sound tracks, both photographic and magnetic. It is adaptable for the reproduction of binocular or stereophonic sound recordings if desired. These improved sound recording techniques give to the re-

BINOCULAR VISION. Normal vision through two eyes which enables the observer to see depth in a scene by fusing the separate left and right eye images in the visual centers of the brain.

STEREOSCOPIC PAIR. The two pictures, taken from different points of view on the horizontal axes, that make up the left and right eye views of a 3-D picture. The stereopair becomes a stereoscopic picture when the viewed end product appears to be an approximation of binocular vision of the original scene.

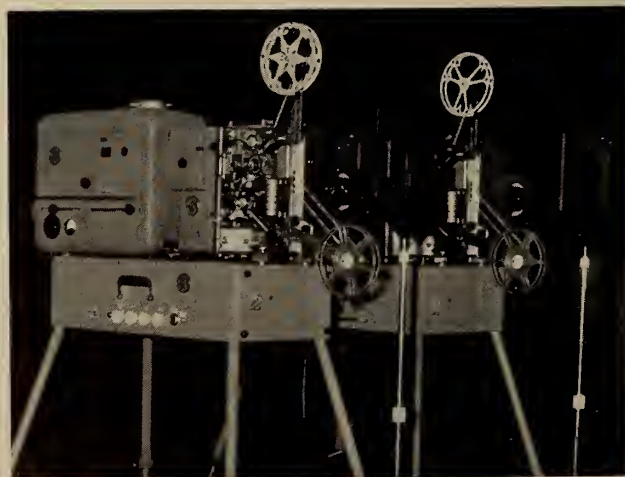
STEREOPHONIC SOUND. A sound system which records and reproduces sound with three characteristics not existing previously — location, movement, depth. In the theater, the sound must appear to come from the apparent sound

produced sound the same greatly enhanced naturalness and realism that 3-D pictures present to the eye.

The new 3-D system consists of two RCA 16-mm portable arc projectors, with selsyn interlocked motors for perfect timing of the two images which must be projected simultaneously to give the illusion of depth. Polarized glasses are used by the audience — just as in 3-D entertainment films. Special silver-surfaced screens are required for the showing of 3-D films because conventional flat white screens depolarize the light from the projectors and hence destroy the depth effects.

RCA claims that this portable 16-mm motion picture projector, using arc lighting, provides from two to four times the illumination of the next best light source. It has its own sound amplifiers, but the equipment can be connected to almost any type of existing stage or auditorium loudspeaker equipment.

Designed to bring the advantages of 3-D to users of educational, documentary and commercial films, this new portable 16-mm equipment is now on the market through RCA Victor. While the equipment has its own sound amplifiers, it may be hooked up with almost any stage or auditorium loudspeakers.



source, move with the action and sound near or far in accordance with the apparent depth of the image. At the present time, this is achieved by using 3 microphones and 3 separate channels in the recording process and similarly 3 amplifiers and loudspeakers in reproducing the sound in the theater. The loudspeakers are placed one on each edge of the screen and one in the center. An additional track is often made providing special effects for the auditorium surround speakers. The recording and reproducing medium is now magnetic replacing the single photographic track. The first stereophonic sound was recorded magnetically on a separate film and was reproduced by an independent magnetic reproducer synchronized with the projector. Future stereophonic films will probably follow the pattern of "The Robe" where the four sound tracks and the picture are on the same film and a four-track sound reproducer is added between the upper film magazine and the main projector mechanism. By virtue of its position, the new sound mechanism was quickly tagged "penthouse reproducer".

Next issue IP will print more of Mr. Kogel's explanations of the new words and terms now puzzling lots of people in the industry. If something puzzles you, drop us a line and we'll pass your puzzler on to Mr. Kogel.

PERSONAL NOTES

A. F. BALDWIN, vice president and export manager of National Theatre Supply, has begun an extensive trip through Brazil,



A. F. BALDWIN,
export manager,
National Theatre
Supply Co.

Colombia, Venezuela, Mexico and the West Indies to confer with exhibitors on the installation of CinemaScope and wide-screen equipment sold in Latin America by Simplex distributors. Before leaving, Mr. Baldwin said that 18 CinemaScope installations have been sold in Mexico.

L. HAYWARD BARTLETT, director of advertising for Eastman Kodak Co., has retired after 40 years service with the company. Well known in motion picture circles, Bartlett, who will continue with Kodak as a consultant, was one of the early winners of the coveted \$1,000 Harvard Award for top advertising copy.



Your patrons will notice the difference! Super Snaplites give you Sharper Pictures, More Illumination, Greater Contrast and Definition.



Clear
Crisp Pictures
with

SUPER SNAPLITE PROJECTION LENSES

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For the Best in Projection use Super Snaplites . . . the only Projection Lenses to give you a true speed of $f/1.9$ in every focal length up to 7 inches.

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Optical CORPORATION
Plant: Northampton, Massachusetts
New York Office: 30 Church St., New York 7, N. Y.
"YOU GET MORE LIGHT WITH SUPER SNAPLITE"

ABSTRACTS OF PAPERS

(Continued from page 15)

lying stereophonic sound insofar as it has been published, and gives examples of how the theory is employed in representative practical situations. Fundamental differences between ordinary binaural listening and stereophony are pointed out, as well as similarities. It is shown that much qualitative but little quantitative information has been reported. Factors which aid some stereophonic effects are shown to be detrimental to others, and methods of minimizing the undesirable conditions are suggested.

STEREOSCOPIC PERCEPTIONS OF SIZE, SHAPE, DISTANCE AND DIRECTION

D. L. MacADAM

Eastman Kodak Co., Rochester, N. Y.

Most of the distortions perceived in stereoscopic pictures are caused by false perspective. False perspective cannot be corrected by variation of the camera inter-axial separation. Parallax movements, which result from head movements in ordinary experience, are lacking in stereoscopic pictures, and are replaced by perverse twists of the scene. The failure of some observers to be impressed by depth in stereoscopic pictures is probably caused by absence of

parallax movements, from which some people normally get more sense of depth than from binocular disparities.

AN AUXILIARY MULTITRACK MAGNETIC SOUND REPRODUCER

C. C. DAVIS and H. A. MANLEY
Westrex Corp., Hollywood, Calif.

A four-track magnetic soundhead for reproducing CinemaScope films in theaters is described. The unit mounts readily between projector and upper film magazine and is film driven. To facilitate threading, the film sprocket is locked when the pressure pads are opened. A low natural-period, Davis filtered drive insures high-quality film motion.

CINEMASCOPE OPTICS

JOHN D. HAYES

Bausch & Lomb Optical Co., Rochester, N. Y.

The CinemaScope system for the presentation of motion pictures in existent theatres has resulted from major technological advances along two facets of engineering: optics and sound reproduction. The optical aspect has given rise to the wide-screen picture. The sound reproduction aspect has yielded stereophonic sound.

In the consideration of the subject the optics shall be considered the dominant factor although the sound, the screen, the film and the projection equipment are to be reviewed.

AN IMPROVED CARBON-ARC LIGHT SOURCE FOR 3-DIMENSIONAL AND WIDE-SCREEN PROJECTION

DR. EDGAR GRETENER
Zurich, Switzerland

Three-dimensional and wide-screen projection both require substantially more than the conventional amount of screen light. The Super Ventarc has been designed to meet these requirements to such an extent that the screen lumens are only limited by the maximum density of radiant energy the film can take. If this value is set at 0.7 w/sq mm, the ultimate limit for a 35-mm projection system will be approximately 50,000 lm, with no film shutter.

AN INDUSTRIAL APPLICATION OF MAGNETIC-STRIPE SOUND TRACK

WILLIAM E. COWLES
General Elec. Co., Schenectady, N. Y.

The General Electric Guided Missiles Dept. has found an economical and useful application for magnetic-stripe sound tracks in the production of documentary industrial motion pictures. This experience indicates a potential users market.

A FAST-CYCLING INTERMITTENT FOR 16-MM FILM

WARREN R. ISON
RCA Victor Div., Camden, N. J.

A 16-mm mechanism designed to advance the film during the vertical blanking time of the television system and its use with a flying-spot film scanner for color television is described. The order of the forces encountered is indicated. Also, solutions to certain auxiliary problems are given as well as operating characteristics and performance data.



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3-PART PORTABILITY — Disassembles into three carrying units. Can be easily assembled and set up in less than five minutes.

BUILT-IN VOLTAGE SELECTOR — Enables you to easily and safely operate within voltage requirements of any particular area.

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New Variable Focal Length Lens

By MERLE CHAMBERLIN

Projection Supervisor, M-G-M Studios, Culver City, Calif.

AN AUXILIARY LENS of variable focal length, which would enable a projectionist to exhibit pictures in a variety of wide-screen sizes by means of a simple adjustment on the calibrated barrel, was recently exhibited at a Motion Picture Research Council demonstration at the Village Theatre, Westwood, California.

Developed by an M-G-M projectionist, Charles Young, of Hollywood Local 165, several pilot models of the lens have been built by the Pacific Optical Co., of Los Angeles. Marketing of the lens, which screws on to the front of a standard half-size projection lens, replacing the lens tube extension, is expected shortly.

Attached to a 4-inch lens, it can magnify to the equivalent of a 2.2-inch lens; when used with a 5-inch lens, magnification is up to that of a 2.7-inch lens. An especially useful feature of the lens is that it can be stopped

anywhere between the long and short focal length positions, enabling the



This is the variable focal length auxiliary lens described in the accompanying article. It is screwed on to the Bausch and Lomb 5½" lens.

projectionist to tailor the picture to the theatre and greatly simplifying the problem of screen masking.

The second feature of the attachment is the elimination of certain inherent inefficiencies of extremely short focal length lenses, such as the difficulty of keeping foreign matter off the back element of a lens that is worked almost against the aperture, and definition troubles under short back focus conditions where even a slight buckle

or breezing of the film exists.

Light transmission is 96.85 per cent, or a 3.15 per cent light loss.

This auxiliary lens is coated and consists of one stationary rear doublet and one movable front doublet. It is 11½ inches long and extends 10 inches from the front of the projector case, about 6½ inches further than does a normal lens. When used with a double-shutter projector, the front shutter is removed and the rear shutter cut to about 87 degrees.

New Williams Screen

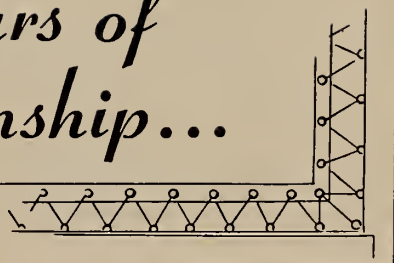
A solid plastic silver-finish screen, said to provide a high degree of reflectance and to be free from streaks and objectionable seams, has been developed by the Williams Screen Co. Although tough, the screen is reported to be permanently flexible. It has clean-cut perforations with no projecting fibers to impede sound or collect dirt.

The entire facilities of the Williams plant are now devoted to producing this screen which was designed for all the new wide-angle and 3-D processes. A brochure describing it may be obtained from the Williams Screen Co., 1675 Summit Lake Blvd., Akron 7, Ohio.

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mind about
the screen
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Screenmanship...



RAYTONE SCREENS have been successfully designed for every type of projection since the "Silent Days" of 1923.

Our own scientific tests as well as those of reliable independent laboratories confirm a 3.5 to 1 brightness gain for our new screen when compared to a flat white screen. This we consider a minimum requirement for really good wide-screen performance.

THE NEW RAYTONE All-Purpose Stereo Screen was developed for every wide-screen system available today—Anamorphic, 3-D, standard 2-D or plain wide-angle projection systems.

New type invisible seams and a practically tear-proof surface make it the RIGHT screen for the CAREFUL buyer.

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Pension Protection — Goal of Labor

The need for adequate pension protection is an important subject among IA men. This is the third in a series of articles reflecting the official views of the AFL.

BUREAU of Internal Revenue approval is required before workers and employers can enjoy the tax benefits possible under a permanent pension plan, as was stated in the previous installment of this series. If this approval be obtained, a worker does not have to pay any Federal income tax on the portion of his wages withheld as a contribution, and he is not required to pay a tax on this money after he retires unless the total amount then puts him in a taxable bracket.

The employer also benefits because the Bureau allows him to regard his pension contribution as part of the cost of doing business. He is permitted to deduct the full amount from his taxable income. However, a pension plan must meet certain requirements set forth in the Internal Revenue Code. The chief requirements are as follows:

Must Be Permanent

(1) The pension plan must be "permanent." It can be terminated only by reason of "business necessity" and then only after the advance approval of the Bureau of Internal Revenue has been secured. Otherwise heavy retroactive tax penalties may be incurred.

The Bureau of Internal Revenue has ruled that a pension plan which is part of a union-management agreement can be regarded as "permanent" within the meaning of this provision even though the agreement has a specific termination date—inasmuch as it is the intention of the parties to maintain the plan as a permanent feature.

(2) The plan must be established through a trust, contract or other legally binding arrangement.

(3) The pension fund must be for the exclusive benefit of the employees and their beneficiaries.

(4) Unless and until all liabilities under the plan have been satisfied, the principle or income of the pension trust cannot be diverted to purposes other than employee benefits. This rule operates to prevent the employer from receiving back any money paid into the trust, even if the payment is an overpayment.

However, he can get rebates in the form of "experience" credits which he can apply to reduce his future contributions or premium payments. In this way, overpayments or so-called "actuarial gains" may be taken out of the plan by the employer, as a reduction in his fu-

ture costs, rather than left in to increase benefits to employees.

(5) The plan must cover either a certain minimum percentage of all employees, or a group of employees determined in such a way as not to discriminate in favor of officers, stockholders, supervisors, or highly-paid employees. The Bureau has two alternative rules for administering this provision—the so-called "Arbitrary" rule, and the "Discretionary" rule.

May Exclude Some

Under the Arbitrary rule the employer may exclude certain short-service and part-time employees. Out of the remainder, 70% must be eligible for coverage under the plan. Out of those eligible, at least 80% must actually join the plan in order for it to qualify.

Actually, few plans come in under this rule. Most of them qualify under the Discretionary provision, which permits the Commissioner of Internal Revenue to approve any classification of eligible employees if it does not discriminate in favor of employees who are officers, stockholders, supervisory employees, or high-paid employees. Under this

rule, many plans which are limited to far less than the number required by the Arbitrary rule have been approved, including plans which covered as few as 10 percent of the employees.

No Discrimination

(6) The actual benefits specified under the plan must not discriminate in favor of employees who are officers, stockholders, supervisory personnel or highly-paid employees.

Once it has been decided that a pension plan will be inaugurated, it is time to consider which of the three alternative systems of budgeting and financing is best adapted to the particular situation. There is the "pay-as-you-go" approach, what is known as "terminal funding" and the "fully funded" plan.

These methods are by no means equally advantageous from the worker's point of view. Generally speaking the fully funded plan is best and the pay-as-you-go plan usually suspect. Next month's installment will discuss these matters.

[TO BE CONTINUED]

Warner Buys Zeiss Lenses

Anamorphic lenses for Warner's SuperScope wide-screen system will come, in part at least, from the Zeiss-Opton Works at Oberkochen, Germany, according to an announcement from Jack L. Warner.

SuperScope, a magnetic sound-on-film system, utilizes a screen aspect ratio of 2.66 to 1.

What's Your Problem?

If You've Got a Question, Send it in . . . IP Will Try To Answer it — and Pay You Too!

WHAT'S your problem? IP is all ears — and we're not only ready, willing and anxious to help you out with the answer, but we'll pay you, too! Real money!

In the September issue, IP started the ball rolling for a new regular monthly feature, a question and answer department tailored to the needs of the working projectionist. Many questions have been received and the answers will begin appearing next month.

You send in your questions, on anything at all having to do with the projection room, the screen, sound — or anything of special concern to projectionists. We'll try to get an authoritative answer for you.

If your question is of sufficient interest, we will print it, together with the answer and your name and address. *And*, if we print it, you get a check for three dollars. Should the same question be sent in more than once the earliest postmark will determine which writer gets the cash. Names of other questioners will be printed.

In any case, you will get an answer from IP, either in the mails or in the magazine.

So, get your questions in — fast! Address all letters to "Editor, What's Your Problem, International Projectionist, 19 West 44th St., New York 36, N. Y."

BOOK REVIEW

NEW SCREEN TECHNIQUES: *A symposium on 3-D, Wide-Screen, Cinerama, CinemaScope, Stereophonic Sound and other new screen techniques by 26 leading experts.* Edited by Martin Quigley, Jr., and with a preface by Dr. Alfred N. Goldsmith. 208 pages. Quigley Publishing Company, Inc. \$4.50.

As editor of an interesting symposium on new developments in the film industry, Martin Quigley, Jr., has given us a valuable literary "package deal" in a book entitled simply "New Screen Techniques." Movie projectionists, along with critics, engineers and, for that matter, the public, are apt to be unable to see the forest for the trees in this new era of 3-Delirium.

"New Screen Techniques" does just exactly what its title implies, explains the sound and fury of the technological revolution now rocking the industry. Twenty-six articles, written by top experts in each department, discuss CinemaScope, stereophonic sound, the third dimension and other oddments of current film production and exhibition. The writers do their work in everyday language. Not only are the systems explained, with all the essential engineering information included, but the histories of the processes are given as well. Old hands at the projection business, for example, will well remember the 3-D of the twenties and thirties, the red and green celluloid "glasses" of the anaglyph system. That story is told in the book, with articles carrying 3-D through the present Polaroid era to the promised days of the Vectograph.

Editor Quigley's authors were well chosen. No less a celebrity than Fred Waller, inventor of Cinerama, tells about that system, along with articles on the same subject by Ralph Walker, Hazard E. Reeves and Lowell Thomas. The selling side of Cinerama is told by Lynn Farnol. Other big names dot the book, from Skouras to Sponable and from Zanuck to Koster. Leon Shamroy, cinematographer, tells about shooting the first CinemaScope film, "The Robe," and others tell about its direction. Space is too short to list all the authors. Suffice it here that the book covers the field, informatively and interestingly. However, in IP's view, the most important section is the one written by Universal's production chief, William Goetz. He makes the point that screens may be built as high as Haman's gallows, and as wide as the Pacific, but unless the "creative" brains of Hollywood make better pictures all the technical advances are so much wasted effort. To this, IP says a fervent "Amen!"—F. H.

NEW!



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Bausch & Lomb

Super Cinephor Projection Lenses

First and only lens giving full edge-to-edge sharpness on widest screens!

Now... the *one* lens series that gives you today's brightest, sharpest image on any screen: CinemaScope, 2-D, expanded 2-D, and 3-D! Finest edge-to-edge definition ever achieved. White glass—no color absorption... transmits full image color and brightness. Fastest projection lens made. Complete range of focal lengths. You're all set *now* and throughout the foreseeable future with this revolutionary new f/1.8 series—new world's standard for the motion picture industry.

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CINEMASCOPE

20th Century-Fox recommends the new B&L f/1.8 Super Cinephor projection lens with B&L anamorphic adapter exclusively for clearest, sharpest, finest CinemaScope screen images.

WRITE for complete information. Bausch & Lomb Optical Co., 61622 St. Paul St., Rochester 2, N. Y.



BAUSCH & LOMB CENTENNIAL

Scene from "THE ROBE,"
20th Century-Fox
CinemaScope Epic



SMPTE HIGHLIGHTS

(Continued from page 14)

clip of a machine gun.

The negative carbon is a large graphite disc, rotated by a motor for even burning and held by the same motor in a constant relation to the positive electrode. In a subsequent issue IP will carry a complete description and pictures of this lamp, including details of its cooling system.

Fred Waller, the Cinerama man, had a paper of his own on the Cinerama process and had some things to say about wide-screen and 3-D. Nice things, naturally, about his own system. Even a one-eyed person can see depth in Cinerama, he said, adding the interesting bit of information that watch-makers and others who do pre-

cision work prefer the kind of monocular loop that fits into one eye. Binocular loops are available, he said, but when did anybody ever see a watchmaker using one?

Evidence of the impact of CinemaScope on technical thinking is the fact that no less than eleven papers on various aspects of the new medium were read. These covered everything from multi-track magnetic soundheads to CinemaScope optics, screens and projection lighting.

Super Arc Lamp

Two papers were read on lighting. These, to be summarized later in IP and to be published in full in the journal of the SMPTE, were by Dr. Edgar Gretener, of Switzerland, and C. E. Greider, of the National Carbon Co., Cleveland. Dr. Gretener described the

Super-Ventarc carbon light source and said that the ultimate limit for a 35-mm projection system will be approximately 50,000 lumens with no shutter and no film in the gate. This is said to be about twice as powerful as any previous projection lamp. Greider discussed high intensity carbons in the blown arc and stressed that radical changes in negative electrode design were necessary.

Next to the SMPTE Theatre Survey report (covered on page 14 in this issue of IP), the touchiest item at the convention was the matter of the new screens for 3-D and wide screen. Rival manufacturers listened politely while W. A. Shurcliff, of the Polaroid Corp., Cambridge, Mass., read a paper on "Screens for 3-D and Their Effect on Polarization." Dr. Shurcliff made it clear that his company, which does not manufacture screens but which is vitally interested in their efficiency, had tested just about every screen on the market. In the discussion following the paper screen brand names were named and some pertinent questions were asked. Several manufacturers fell over each other getting out of the room when the queries got too hot to handle.

3-D Demonstrated

During one of the sessions the Polaroid Corp. showed some 3-D pictures, using the new RCA 16-mm arc projectors described elsewhere in this issue of IP. To this reporter's eyes, the pictures were the clearest and best 3-D yet seen. Of course, projection conditions were just about perfect. Emphasis was on industrial use of stereo when extreme realism is of value in demonstrating processes or products. The same cameras were used in a demonstration of CinemaScope. The effect was startling when a 16-mm slide with a "squeezed" color clip from a Fox picture was shown. The picture was bright and sharp, with the figures thin as pencils. When an anamorphic lens was attached and the same slide re-projected the loss of light was amaz-



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ing. From a bright, sharp picture, the image faded away.

Amusing was a story told outside the conference room by an engineer involved in one of the early openings of "The Robe." Following the New York and Hollywood premieres of the CinemaScope picture Fox was anxious to have a new and perfect demonstration for critics and biggies of the industry in a city which shall be nameless. Installation men worked all night mounting the new big screen, finishing an hour or so before the zero hour for the premiere. The screen was tested — and the boys discovered that it had been mounted wrong side up. It was too late to do anything about it so the picture ran on schedule. The critics raved and the big shots beamed. The light on the big screen was perfection. Sharp and brilliant. On the orchestra floor, that is! The audience in the balcony couldn't see a thing. Reason? The lenticles of the wrong-side-up screen threw every bit of light downstairs.

New Soundhead

One of the more interesting papers was read at the final session by Dr. W. W. Wetzel, research scientist with the Minnesota Mining and Manufacturing Co., of St. Paul. Dr. Wetzel, winner of the SMPTE's Samuel L. Warner Memorial Award, described a new material for magnetic soundhead that promises to outlive the present soundheads by 100 to 1 or more. The paper, by Dr. Wetzel and R. J. Youngquist, identified the material as Ferrite, an iron oxide ceramic with high abrasion resistance. Such heads, Dr. Wetzel told IP, should be marketed in limited number by November.

Among the sizzling issues bandied about the cocktail circuit was that of standards — standards for screens, for aspect ratios, for sound, for sprocket sizes (whatever happened to the old standard?) and for just about everything else standardizable. The SMPTE took a long step to getting sound in sync with the decision, announced by John K. Hilliard, chairman of the society's sound committee, that a set of test films would be made under SMPTE auspices. Purpose, of course, is to set performance standards for stereophonic. The industry is now working on specifications laid down by Twentieth Century-Fox.

An interesting paper was read by

Thomas Baird, of the United Nations, who told of some peculiar problems faced by American producers selling in foreign markets. One example: symbolism as used in Hollywood films sometimes has a reverse effect. The owl in this country is the symbol of wisdom. In some other countries the same bird symbolizes stupidity. To us, the dove is the symbol of peace. In the Far East, including Korea, it is the symbol of death. The Russians are not so smart, either! Remember when they tried to put a dove over the peace tent at Panmunjom?

An incidental note on the convention must be made about the top job done in the press room by Leonard Bidwell, of RCA, Camden, N. J. Bidwell handled the trades and dailies for the SMPTE under difficult conditions and managed to keep everybody happy.

Altec Men Get Data

Altec Service Corporation's field engineers have received a special eight-page bulletin covering technical data necessary for theatre installations of the 20th Century Fox CinemaScope system.

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clearest
picture
YET!**

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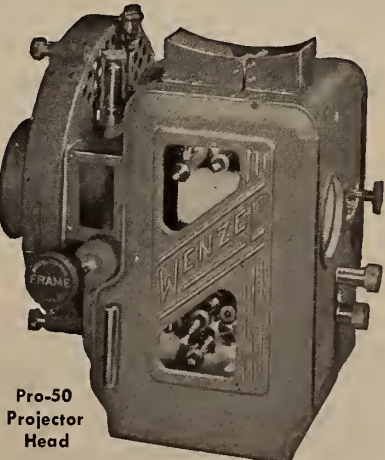
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Motiograph Speeds "AAA" Soundhead Production

Motiograph, Inc., Chicago, is now in full production on its new "AAA" penthouse reproducer, the company announces. The new reproducer is designed for use with three or four track stereophonic sound magnetically recorded on either the picture film or a separate sound film.

The reproducer, which the company states may be used with any modern make or model of projector mechanism, is mounted below the upper magazine.

The position of the idler rollers on the AAA penthouse may be changed to accommodate the variation existing between the point of sound pickup and the projector aperture in the different makes and models of projection mechanisms. When the photographic sound reproducing facilities in the conventional theatre sound system are to be used, the film by-passes the magnetic pickup on the AAA. The AAA penthouse can thus always be retained in position no matter what type of sound reproduction method is employed.

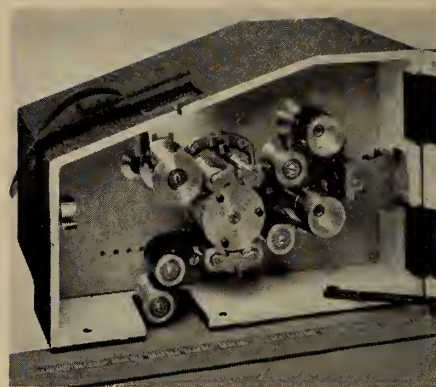
The AAA is delivered with a 4-channel magnetic pickup to reproduce stereophonic sound recorded on the composite print as used in CinemaScope produc-

tion. Motiograph will also make available a three channel magnetic pickup to reproduce stereophonic sound recorded on a separate sound film. This unit may be quickly and easily substituted for the 4-channel magnetic pickup.

Theatres with three projectors will be particularly interested in the provision in the AAA penthouse that permits the substitution of 3-channel magnetic pickups for the 4-channel pickups normally supplied.

Such theatres may install two AAA penthouse reproducers with 4-channel pickups and one AAA penthouse reproducer with a 3-channel pickup. By properly interlocking the projectors, the theatre owner can present stereophonic sound pictures recorded on a separate sound film and can also present 3-D pictures with stereophonic sound.

For theatres not already equipped with either a separate magnetic reproducer or three projectors, Motiograph will make available a separate reproducer which will include a three channel AAA penthouse reproducer. This unit will sell for less than the console type of separate magnetic reproducer recently sold by Motiograph.

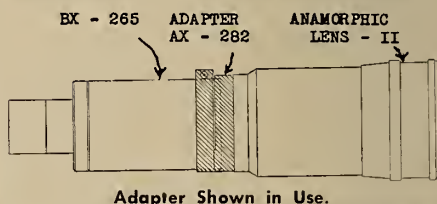


Above is the Motiograph "AAA Pent House" reproducer for use with 3 or 4-track sound-on-film stereophonic systems. Note the foot rule that shows the small size of the unit.

Kollmorgen Anamorphic Adapter

The Kollmorgen Optical Corp. now has available several adapters for fitting its projection lenses to the anamorphic lens attachments needed for the showing of CinemaScope films.

These adapters are designed solely for the purpose of connecting the anamorphic lenses to Kollmorgen projec-



tion lenses. They will not support the anamorphic lens; supports must be obtained from the projector manufacturer. The adapter clamp illustrated here is for fitting type II anamorphic lenses to the Kollmorgen BX-265 Super Snaplite 4-inch diameter lenses.



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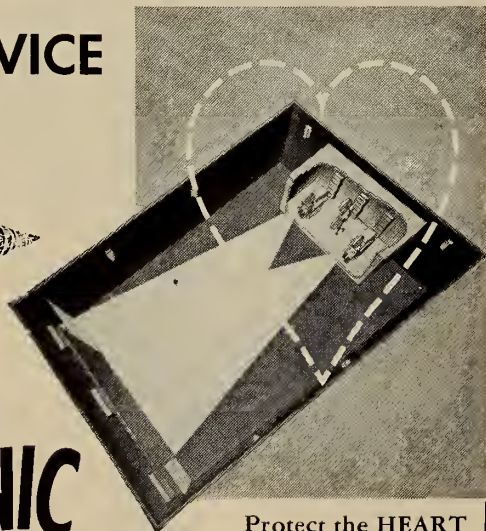


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CINEMASCOPE RECORDS

(Continued from page 16)

not capable of transmitting nearly as much light.

Despite whatever light losses may occur in the anamorphic attachment, there is a considerable light advantage for CinemaScope over the kind of wide-screen projection mentioned above.

Lack of Height

It is interesting to note that after the premiere at Grauman's Chinese Theatre, some Hollywood production executives and technical men complained about the lack of height in the CinemaScope picture. Many observers of the current film scene, including *International Projectionist*, cannot see how Fox expects to make a versatile medium out of the CinemaScope system unless the aspect ratio is reduced to at least 2 to 1.

If Twentieth Century-Fox had chosen an anamorphic lens that would magnify in the ratio of 2 to 1, they could have obtained many advantages on a screen of these proportions — more than sufficient light could easily be projected on the screen and the use of fewer or less powerful cylindrical segments in the lens would probably have resulted in a sharper picture than is now obtained.

However, they chose the more sensational 2.55 to 1 ratio with all its possibilities of impressive panoramic scenes, and the resulting effect of depth gained from such a wide angle of vision. This, they felt, was something new and exciting to present to a movie-bored public.

As mentioned before in this article, only time and the public response to future CinemaScope releases can really establish the position of CinemaScope in the future of the motion picture industry, but those who are critical

should not sell it short. At the Roxy theatre in New York City, "The Robe" is earning more money than any picture ever did in a single theatre in the same period of time. It is expected to remain there until December at least and to earn in this one theatre 25 percent of the negative cost of producing the picture, or a clear million dollars at the Roxy alone. And that, as the saying goes, "ain't hay."

Also to be remembered is the sincere acclaim that "The Robe" and CinemaScope received from critics throughout the country. Already mentioned, because of their careful and balanced analysis, were the opinions of Bosley Crowther. These opinions however, are not typical of the extravagant praise that was general in the press.

For instance, Kate Cameron, writing in the *New York Daily News*, said, referring to CinemaScope: "It has ushered in a new era of film production. This is the most important event in the progress of photography and projection since Technicolor first tinted the screen."

Writing in the *Los Angeles Times*, Edwin Schallert states: "The grandeurs of ancient Rome are visualized in such a way in 'The Robe' as to point to a new art evolution in films which will take the form of an amplification and broadening of the treatment of big and impressive subjects."

There is no need to present a further sampling of reviews — they all make the same point. CinemaScope has made a strong impression on the press. Judging from the record-breaking box office receipts in the large-city theatres throughout the country where "The Robe" has opened, it has made an equally strong impression on the public. If this impression remains after the novelty wears off, CinemaScope and related systems will indeed do much to revive the motion picture industry.

"Wonder-Lite" on Market

The Da-Lite Screen Co., of Chicago, is now making delivery on its new "Wonder-Lite" silver-finish screen designed for wide-screen and 3-D projection as well as standard 2-D film showings.

The Wonder-Lite is said to assure authentic color reproduction and the company claims it holds 98 to 99% of polarization in 3-D projection. A seamless appearance is achieved through perforated seams on sizes to 23½ feet. Larger sizes have solid seam stripping.

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IN THE SPOTLIGHT

(Continued from page 21)

tional Theatre Supply service man in the Buffalo area. He joined his first projectionist union in 1911, then known as the Electric Moving Picture Machine Operators Union, Auxiliary Local 4, IA, the forerunner of Local 233. He is a past president of the Local and for 11 years served as its treasurer. He is a member of the 25-30 Club.

Another visitor to IP offices last

month was W. E. J. (Bill) Rose, member of Local 91, Boise, Idaho, and projectionist at the Ada Theatre there. He and his wife, Agnes, dropped in on their way home to Boise after an around-the world tour. The Roses (known in Boise as "The Four Roses" — pop, mom, and the two boys) formed the habit of taking a trip every few years. Two years ago it was Europe; before that they drove to Alaska along the Alcan Highway. For their next trip they plan to tour Mexico and Guatemala.

On this last trip Rose visited two foreign projection rooms — one at a sort of combination amusement park and drive-in theatre in Hong Kong, seating between 4000 and 5000 people. Picture shown was "Show Boat," with the dialogue in English. The projectionists were Chinese who could not speak English, and upon receiving a cue from somebody in the audience they would throw Chinese subtitles on a smaller screen next to the one on which the picture was being shown. Projection and sound were good, said Rose. The second theatre Rose visited was the Regal, the largest house in Bombay, India. Here, too, he found excellent projection and sound. Projection equipment included Strong lamps and rectifiers, Century projectors and National carbons.

From Canada came Lawrence Greer, member of Toronto Local 173. This was Greer's first visit to New York and he was very much taken with the city. He regretted his limited stay and promised to repeat the visit very soon. However, he managed to find the time to visit the Music Hall and Paramount Theatre projection rooms. He was very appreciative of the many courtesies shown him by the projection crews of both theatres, and he was particularly grateful to Harry Rubin, director of projection for Paramount Theatres, and to Charles Muller, chief projectionist at the Music Hall, who made these visits possible. Greer's visit to New York was a one-day affair, partly to have a look at "The Robe".

• Roy Brewer, who resigned last month as IA West Coast representative, has been named executive assistant to Steve Broidy, president of Allied Artists. Although the exact nature of Brewer's duties were not specified, it is believed that he will not participate in any labor matters for the company.

Atlas Kit Cuts Costs

Many small theatres in Southern California are using Atlas triple-magnetic reproducer kits in preference to acquiring separate magnetic reproducers when equipping for stereophonic sound, according to the Atlas Electronic Co., Hollywood. This kit, the company states, is being used for some stereosound installations on the M-G-M lot.

The parts provided by the kit operate in the standard projector sound head and eliminate the necessity of a separate reproducer. The projectionist merely threads differently for 3-channel magnetic reproduction than for optical. The optical system remains unaffected by the addition of magnetic reproduction, the Atlas Co. states.

This method of getting stereosound is less expensive than a full-scale separate reproducer system. In a 3-projector setup, the kit is installed on one machine which acts as a separate magnetic reproducer. With four machines, the two outside machines become stereophonic reproducers. In a 2-machine projection room, one machine is used as a reproducer. This latter arrangement requires a 5,000-foot intermission, as in the case of 3-D.

3-D Platters Now

An external third speaker for its high-fidelity home phonograph to produce "3-D sound effects" has been announced by Columbia records. The effect is produced by channeling upper-middle and high frequency sounds through the extra speaker while the two regular speakers reproduce the others.

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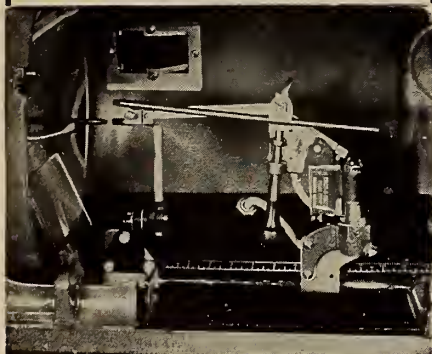
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STEREOSCOPIC PROJECTION

(Continued from page 12)

The cross-shaft gear-boxes are mechanically linked to the soundhead or projector drives by means of sprockets and chains; and the reduction gears in the boxes cause the shaft to revolve rather slowly — about 50 RPM — in order to eliminate vibration and to minimize the hazard to projectionists. Manufacturers' instructions anent the mounting of the gear-boxes should be followed to the letter. A switch must also be provided for turning both projector motors on simultaneously.

Most projectionists who have had experience with both mechanical and electrical interlocks prefer the latter. While mechanical interlocks of good manufacture are entirely satisfactory, many of the older ones were anything but good. Because so much trouble has been experienced with these, we must go on record as recommending electrical interlocks.

The electrical interlock consists essentially of two selsyn motors. These may be mounted on the front of the soundheads in place of the gear boxes of the mechanical interlock. In a certain make of equipment, the selsyns are mechanically linked to the drive-gearing of the projector by means of chains and sprockets. Each selsyn motor is electrically connected to the power mains, and both are intercon-

nected. When the selsyns are switched on the projectors are "locked"; and then, when both of the projector drive motors are turned on simultaneously by means of a single switch which bypasses the separate motor switches, the two projectors start in synchronism and continue to run in step.

Polarizing Filters

Two polarizing filters are needed for 3-D projection, one "left" and one "right," and two frames, or holders, which are mounted over the projection ports perfectly level and perpendicular to the lenses. The filters may be plain sheets of Polaroid or Polaroid cemented between two "flats" of optical glass. They are fragile in any case; and the projectionist who does not have a spare set on hand is living too dangerously for comfort. The projectionist also needs a soft brush for wiping dust from the filters and two rolls or loops of test film for lining up the projectors.

Because the regular matte-surface motion-picture screen depolarizes polarized light, an aluminum-surfaced screen is essential for 3-D presentations. There are several satisfactory makes of aluminum screen available; and although it is usually better to purchase a new aluminum screen made specifically for 3-D than to resurface an old matte screen with aluminum paint, *seamless* matte screens which have been skillfully sprayed with suitable metallic paints often give acceptable results.

The exhibitor should make certain that he gets a *seamless* aluminum screen, and the projectionist should see to it that wrinkles have been removed by very careful stretching. Wrinkles, waves, seams, and creases are very conspicuous in "specular" screens, and will mar the finest projection.

The arc-lamps used for conventional projection may possibly not be adequate for 3-D projection. We have already seen that 3-D pictures projected upon a highly reflective aluminum screen, even when viewed from the middle of the auditorium, have but 70% of the brightness of regular movies projected on a matte screen. If conventional pictures appear to be unusually brilliant, the lamps need not be replaced; otherwise new lamps are needed.

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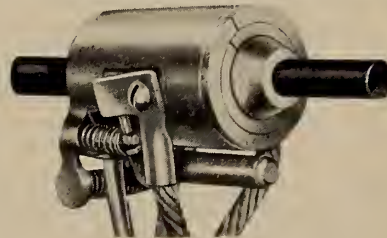
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turer recommends that theatres having 65 — 70 ampere arc-lamps should replace them with 85 or 100 ampere arc-lamps, while in smaller theatres, 65 — 70 ampere lamps should replace the present 1 KW and 46 ampere lamps.

It is especially important to replace all metal arc-lamp mirrors with silvered-glass mirrors. Metal mirrors reflect too much heat and may damage both the film and the polarizing filters.

In any case, theatres having only one generator must obtain another of similar rating and characteristics, inasmuch as multiple-arc generators are not designed for the continuous operation of two arcs beyond the few minutes required for change-overs. To supply both projectors from a single generator for a longer time than 5 minutes will overheat it and possibly damage the windings.

Generators for 3-D

The two generators will require special switching equipment to permit both lamps to be powered by a single generator during the projection of conventional "2-D" films.

It is highly desirable to replace old-style uncoated F:2.5 projection lenses with modern anti-reflection-coated F:1.9 lenses matched to within one quarter of one per cent for focal length.

The matter of sound equipment for 3-D presentations is a source of considerable worry to the owners of medium-and small-sized theatres. True, all 3-D productions released to date are furnished with standard optical sound-tracks, but stereophonic magnetic tracks recorded on a separate film are available for many of these releases. To play these stereophonic recordings, the following rather expensive items are needed:

1 duplex 3-track magnetic reproducing machine equipped with electrical interlock to maintain synchronous operation with the picture projectors.

3 high-fidelity amplifiers with associated power equipment.

3 identical loudspeaker systems to be placed behind the middle and both sides of the screen.

6 or more loudspeaker systems placed at the back and sides of the auditorium for sound effects.

The old theatre amplifier will be used to supply the sound effects, recorded in the standard optical track, to the auditorium speakers.

3-D CANDIDATE RUNS FOR MAYOR OF NEW YORK

Bob Wagner, son of the late Senator Wagner running on the Democratic ticket in New York City's red hot mayoralty contest, has ordered campaign buttons billing him as a "3-D candidate"—*Down-to-earth, Devoted, Democratic.*

Once the 2-strip 3-D equipment has been installed, the projectionist will find that many new and unusual duties have been thrust upon him. His first task, to be repeated at intervals, involves the mechanical adjustment and optical alignment of the projectors.

The intermittent movement and film-gate tension pads of each machine should receive attention because picture-jumpiness and side-sway cannot be tolerated in 3-D. The flanged guide-roller at the top of the gate-casting should be centered to provide perfect alignment of the film as it flutters by the aperture.

Next month's article, which concludes this series, will continue the discussion with particular reference to the requirements made by 3-D on the projector mechanism and lamphouse. Also covered will be a variety of practical problems the projectionist will encounter in setting up for, and showing, 3-D.

[TO BE CONTINUED]

New York Roxy Has "Excelite 135"

Designed to burn 10-mm Hitex carbons at 135 amperes, or 11-mm regular carbons at 120 amperes for maximum light on wide screens, the new National Excelite "135" projection arc lamp with the Reflect-O-Heat unit has been installed in many of the leading theatres which are presenting the CinemaScope production, "The Robe." Included in the installations is the Roxy Theatre, in New York.

The Excelite "135" is being widely installed for use with 3-D presentations, since the full hour running period of 5000-foot 3-D reels is possible with the burning of 10-mm Hitex carbons at 120 amperes, or the 11-mm regular carbons at 115 amperes.

The color value and intensity of the light at the screen is maintained constant throughout the full trim, without the need of manual adjustment, by an automatic arc crater positioner, the company states.

National's new Reflect-O-Heat unit, it is claimed, permits a great increase in light at the screen without a corresponding increase in heat at the aperture. Positioned in the path of the light beam, the Reflect-O-Heat unit passes the visible light while diverting the heat rays back into the lamphouse from which it is removed through the lamphouse draft stack.

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THE MACHINE GUN belonged to E Company, Second Battalion, Seventh Marines. It was under the command of Technical Sergeant Robert Sidney Kennemore.

It was busy. For on this November night fanatical Red masses were swamping Marine defense positions north of Yudam-ni.

Fighting was close and desperate. Fifteen yards in front of the gun, a Red soldier raised his body briefly and sent a grenade into the air. It landed squarely among the crew. In a split second, Sergeant Kennemore had covered it with his foot.

There was a violent, muffled explosion, but not a man was hurt. Not a man except Sergeant Kennemore. He had given both his legs to save

his comrades' lives.

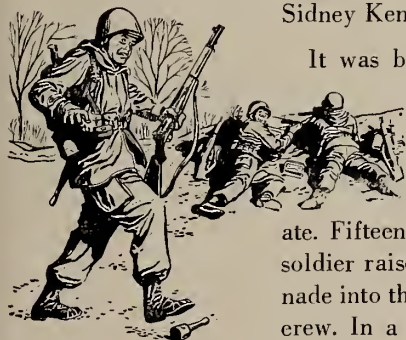
"When I was on active duty," says Sergeant Kennemore, "I sometimes wondered if people back home cared as much about stopping Reds as we did. Now that I'm a civilian, I know they do. And one proof is that so many of my neighbors are investing in E Bonds for our country's defense. Believe me, I know how important that defense is. So I'm investing, too, just as I hope you are!"

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A New Look for the New Movies...

Wide-Screen and 3-D Projection Lighting

The film industry is currently being revitalized by the third great technical revolution in its history. First, sound; then color; now panoramic and tri-dimensional realism are having their profound effect on movie-making and showing techniques.

Record Sums Spent

Exhibitors in the race to equip themselves for these new box-office bonanzas are spending thousands and tens of thousands of dollars on new optics, screens, sound equipment. Where does screen *lighting* equipment fit into this picture of modernization?

Light Losses Serious Problem

In wide-screen projection, screen light is distributed over $2\frac{1}{2}$ times the area of conventional screens. In 3-D systems, filters reduce the total screen light to about *half* its former value, even with *two* projectors trained on a new screen of much higher reflectivity. Both wide-screen and stereoscopic effects suffer serious handicaps from inadequate

lighting; nothing short of a *major* improvement in your present lighting equipment will enable you to take full advantage of their terrific mass appeal.

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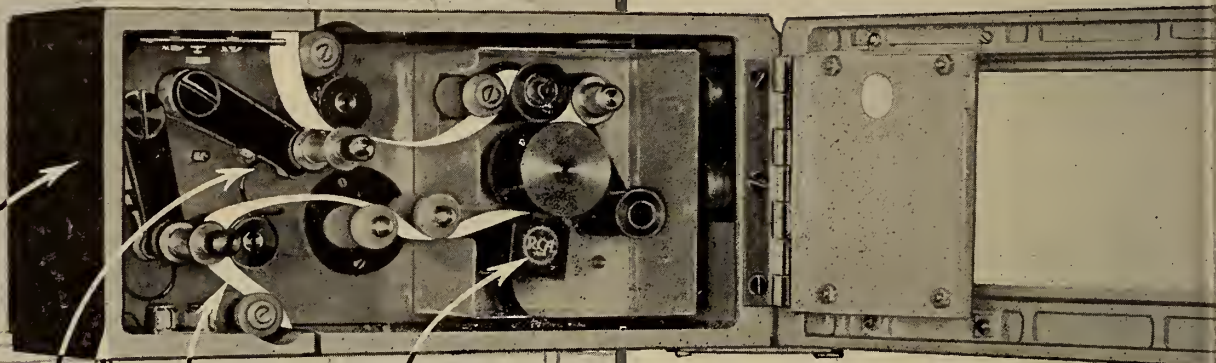
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MONTHLY CHAT

IP URGES projectionists to get behind the Christmas Salute fund campaign for the Will Rogers Memorial Hospital. We think the hospital has done, is doing now, and will do in the future a magnificent job in caring for those in our industry inflicted with tuberculosis.

More than one projectionist, now working usefully and happily, owes his life to Will Rogers Memorial. The hospital is uniquely our own, giving free care to anyone in show business whose misfortune it is to be a victim of TB.

However, we have a bone to pick with a top executive of the Will Rogers board—and with his speech on behalf of the hospital before the Theatre Owners of America in Chicago.

The gentleman, who should know something about public relations but who obviously knows very little, told his luncheon audience in Chicago about the hospital's new research laboratory. Scientists there, he said, have discovered a new antibiotic holding great promise in the treatment of tuberculosis. He said that \$30,000 was needed for its development, a sum beyond the hospital's immediate resources.

At this point the gentleman made an amazing statement—a statement so startling in its implications that your IP representative could hardly believe his ears.

The hospital board, he said, was going to be a dog in the manger. Research on the new drug, with its promise of life for thousands now dying of tuberculosis, has stopped until funds are available to carry on. The hospital, he said further, would not go outside for research funds because the motion picture industry had no intention of sharing the glory should the new drug prove effective.

"Think of the public relations value to our industry," he said, "if our own Will Rogers Memorial Hospital can bring out a cure for tuberculosis?"

IP wonders if TB sufferers, including patients, some of them projectionists, in the Will Rogers Hospital, will appreciate that kind of public relations?

May we respectfully suggest that the hospital's myoptic board get in touch with Dr. Esmond Long, chief of research for the National Tuberculosis Association, and talk the thing over. Maybe something can be worked out whereby that \$30,000 may be obtained—and whereby that jealously desired "public relations" may be safeguarded as well.

Meanwhile, let's be charitable and assume that the hospital's spokesman at Chicago didn't know what he was talking about. And let's go all out in support of the Christmas Salute.

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Hints on Handling Magnetic Soundheads

Simple adjustments can keep a show going pending the arrival of a service engineer. How to correct sound loss due to worn heads and how to demagnetize and care for sound equipment.

By C. A. TUTHILL

PRESENT MAGNETIC sound units require, in theory at least, little attention from the projectionist. However, the immediate future, with CinemaScope installations increasing at a rapid rate, will see important changes and, just as the keen projectionist knows his separate reproducers and his optical sound, so will he want to know his four-track units—and how to handle them.

While some “penthouse” manufacturers assert that their units require no adjustment nor attention following installation by engineers, experience has shown that this, to put it conservatively, is not always a fact. Projectionists will figure out quite easily why the engineer takes the steps he does during alignment, including a thorough demagnetizing of the entire equipment.

It is realized by IP that there is no substitute for a good service engineer, equipped with the proper tools for his job. However, there is always the question of what to do “before the doctor comes” when a real emergency arises. It is for this reason that we attempt here to give some basic infor-

mation about magnetic sound reproduction and to tip off projectionists to some of the tricks of the electronic trade.

Show Stops Are Rare

It might be mentioned, too, that show “stops” are rare due to failure of magnetic equipment. For example, soundhead clusters wear rather slowly and there is plenty of warning before sound goes really bad. The same “warning time” is usual in the case of other troubles.

Theatre projection with magnetic sound tracks presents no really complex problem. Reasonable care of the equipment, plus use of a few preventive maintenance tricks as outlined below, should net good magnetic sound reproduction. Since amplifiers, equalizers, faders, horns and cross-over networks are familiar to men in the craft, emphasis here is placed on the newer magnetic facility.

A magnetic pickup, or reproducing head, is simply a rate-of-change unit. In other words, voltage output from the magnetic head is proportional to the rate of change or flux emitted from a magnetic film track. Further-

more, the amplitude of voltage output is proportional to frequency. This is true because, for a given distance along the film track, the rate of change for a high frequency far exceeds that for a low frequency.

The above facts account for the 6-decibel-per-octave rise of the magnetic track characteristic shown in curve “AA” in Figure 1. The rise is even greater in the lower frequencies.

To put it differently, it is known that the amplitude of the output signal is proportional to the frequency of the recorded signal. Thus, when the frequency is doubled, output amplitude is also doubled. Since doubling a signal voltage is the same as raising it 6db, output from a magnetic track raises 6db-per-octave.

These basic laws are briefly reviewed to clarify the necessity for equalization as represented by curve “DB” (Fig. 1). For the normal speed of 90 feet per minute, the magnetic curve continues to rise to approximately 4,000 cycles whereupon serious demagnetization and slit losses occur. Slit losses in this case are due to limitations of the magnetic gap.

Basically the limitation is defined by the fault which occurs when the very short wavelengths of the upper high frequencies are of the same order of magnitude as the limit of resolution of the gap itself.

A second cause for the rapid roll-off above 4,000 cycles (See Fig. 1) is self-demagnetization. To put it simply, if not quite accurately, myriads of ultra-microscopic magnets, crammed closely together within the coating strip on the sound track, resist further decimation. They become so small, for the higher frequencies, that they literally demagnetize themselves.

Thirdly, the value of the supersonic bias used for recording is constant. The value of the tiny high frequency modulations in the track varies and often is far less than that of the constant bias. A partial erasure is the direct result. The need for equalization during projection (and on this one you can't wait for an engineer) is obvious.

Significance of Oxides

Iron oxides used for sound tracks differ and their significance should be realized. Hollywood studios adjust their supersonic bias to a value which is critical for a specific oxide. Nevertheless, projectionists will find that frequency response and recorded levels will vary with oxides. Response may be spot-checked by ear or by comparison with a test film. Levels are easily checked by a short run before show time. Check a quiet dialogue section; *title music may be souped up*. Differences as great as 12 decibels have been experienced between dissimilar oxides. When, and if, a sneak preview comes your way, get the facts from the studio engineer. He should know the proper fader setting. It's a horrible thought but, without stand-

ardization, the future may see as many choices of oxides as the photographic industry now offers in choices of film base.

The Society of Motion Pictures and Television Engineers, as well as other organizations, is already at work to establish standards relative to such developments. Oxides and binder combinations are being developed which even now show a decrease in magnetic head wear. Gains have been made to reduce the present attraction of dirt particles through frictional static while your machine is running.

Program Level 'Drop-Outs'

Momentary program level drop-outs now occur occasionally. These are more serious for higher frequencies because of the lesser signal magnitude. Any small irregularity in the pigment of present coatings, such as an oxide concentration or an imbedded particle of dirt, either of which protrudes from the normally flat surface of the track coating, will separate the track from the soundhead sufficiently to cause a magnetic drop-out. When we realize that present coating may average only five or six ten thousandths of an inch in thickness, we may be grateful for today's accomplishments.

To this point we have considered oxides only as regards sound. Interesting new developments show that pictures, as well as sound, can be carried on magnetic tracks. RCA recently previewed magnetic television picture transmission from coast to coast. No other recording method offers the extreme fidelity demanded for reproduction of the far greater spectrum required for picture.

One basic maintenance requirement for projectors running magnetic film tracks is periodic de-gaussing, another

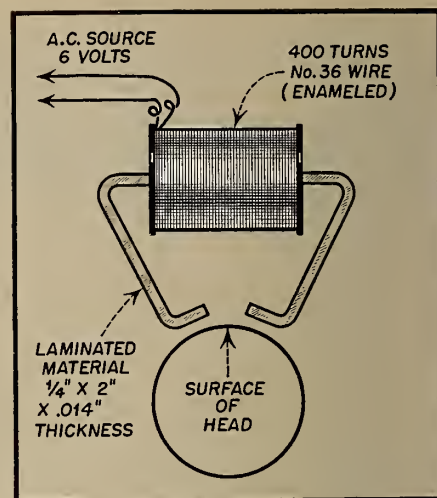


FIGURE 2

term for demagnetizing the equipment. Any machine parts which constantly contact magnetic tracks also became magnetized. The track field, normally intercepted by the pickup head, spews its permanent lines of force into all other projector parts contacted. Present machines are constructed almost wholly of ferromagnetic metals. Future units may use bronze or non-magnetic alloys to avoid this condition.

Caution: Remove all magnetic sound track film from the projection room to avoid accidental erasure during the de-gaussing procedure. Also remove your wrist watch. A considerable field strength is necessary.

Any six or ten volt 60-cycle supply provides an ideal power source for de-magnetization. It is the alternating field that does the trick. Values are not critical, but specific construction details will be given later for a typical de-magnetizer.

To test the efficiency of an improvised unit, place a cheap compass near the coil. If the compass goes crazy, you are in business. Once an adequate field has been checked, it is merely necessary to draw the active coil slowly across or along the shape of the units to be demagnetized. Over application is not possible. Parts will merely be neutralized more with each application.

Demagnetizing the Head

The pole pieces of a magnetic reproducing head exhibit a low retentive force. Otherwise noise from residual magnetism within the head will become additive to ambient noise within the magnetic record. Projectionists must

(Continued on page 33)

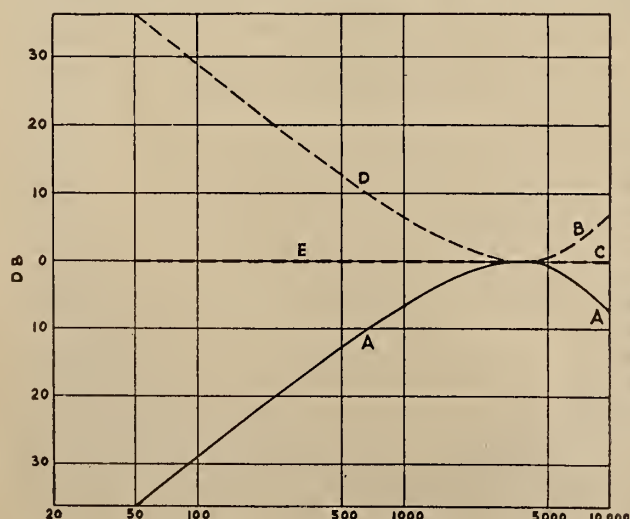


FIGURE 1

This graph, referred to in the text, shows the necessity for equalization of the decibel output in magnetic reproduction during projection. Rate of change in the high, frequency range far exceeds the change rate in the lower frequencies — and it is precisely in these high frequencies that most difficulties occur.



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Stereoscopic Projection and Photography

Solutions for many of the mechanical, optical and electrical problems that the projectionist faces when showing films in the present two-projector 3-D system are considered in the following article which concludes this series.

IV - 3-D Projection Room Problems

By ROBERT A. MITCHELL

PROJECTION room changes and extra equipment needed for 3-D were considered in last month's instalment of this series. The present and concluding article continues the discussion with particular attention to the requirements made on the projector mechanism itself. Also considered are a variety of practical problems that the projectionist will encounter in setting up for and showing 3-D.

The choice of a projector for 3-D showings involves quite a number of important considerations. The mechanism must have a rear shutter to avoid undue heating of the film with high-powered arcs. The intermittent movement must be unusually rock-steady; and the lens mount should be large enough to accommodate F/1.9 lenses.

Some of the older projectors cannot take the modern fast lenses; but loss of lights is not too serious with F/2.5 lenses if these have anti-reflection coatings. But whatever lenses are used, they must match in focal length to within one quarter of one percent.

"Studio" Guide Rails

Many of the newer projector mechanisms employ "studio" guide-rails in an attempt to reduce side-weave and maintain constant lateral positioning of the film in the gate. Although studio guides may reduce the range of side-sway, they definitely introduce rapid irregularities into whatever side-wise movements of the film that may occur. Such movements of the film do occur whenever the guide rails have become grooved and whenever the film has shrunk below the standard 35-mm width of fresh stock.

It does not require a genius to appreciate the fact that, if the guide-rails be correctly spaced for fresh film, shrunken film will have a tendency to "bounce" laterally from one rail to the other. And if the rails be

a few thousandths of an inch too far apart (as they usually are), all films will have a tendency to jiggle side-wise *except when the rails are misaligned in such a way that the film "brings up" snugly against one rail, but does not contact the other rail.*

The rapid sidewise jiggling effect can easily be seen when 3-D pictures are looked at without the 3-D glasses.

Nearly all of the more modern mechanisms have studio guide-rails — a feature, at least in the opinion of this writer, that should not have been incorporated into theatre projectors. However, the Motiograph AA has a sound solution of the side-weave problem. In this machine there are two flanged guide-rollers, one at the top of the gate and the other at the bottom, just below the aperture.

Take-Up Tension

The use of 5000-foot reels for 3-D demands a slightly greater take-up tension than is necessary for the regular 2000-foot reels. The familiar rule for adjusting the take-ups applies to the larger reels, of course. Place a fully loaded 5000-foot reel in the lower magazine and increase tension to the point where the reel of film readily starts turning of its own accord when the projector is switched on. Avoid excessive tension.

The 5000-foot magazines and take-up assemblies supplied by all of the well-known manufacturers are of excellent quality, and yet projectionists have actually been discovered squatting on the projection-room floor turning the 5000-foot take-up reels by hand! There is no sensible excuse for a dilemma of this sort unless the take-up belt comes apart or the reel-shaft key shears off. These, needless to add, are unlikely accidents.

The practice of having too little take-up tension, the writer believes, was a "fad" engendered by the now obsolete Western Electric universal bases. In these outfits the take-up

hold-back sprocket was located in the lower magazine instead of in the soundhead. Because there were no rollers between this sprocket and the lower reel, the uneven pull of the film caused this sprocket to "sing" with a buzzing noise.

Singing hold-back sprockets usually indicate worn teeth or too much take-up tension — or both together. In the universal-base equipment, however, the sprocket sang exuberantly even when new and when the take-up tension was correct.

Fearing torn sprocket-holes and film-breaks, many projectionists operating on this old-style equipment chose to slack the tension to the point where the lower reel would have to be given a twirl by hand to start it turning when the projector was switched on. This unnecessary practice may have soothed projectionists' nerves by quieting the lower sprocket, but it should not be tried with 5000-foot take-ups!

Lamp mirrors and condensing lenses should be scrupulously clean and free from pit-marks. Both lamps should be adjusted for maximum and equal light-output. Differences in illumination can easily be detected by projecting blank light on the screen, rapidly switching from one machine to the other by means of the change-over shutter. If the Polaroid 3-D filters are in place, they should be removed before making this test. The intense heat of blank light wrinkles them, making them absolutely unfit for use.

Equalizing Light Output

In case the light-output of one projector is consistently brighter or dimmer than that of the other, check the voltage of both lamps and the current (amperes) consumed by each in normal burning. There are bound to be slight variations in current from time to time, but consistently unequal current-consumption indicates either

corroded connections or differences in the resistance of the ballast rheostats. Remember that faulty connections in the ballasts have the same effect as faulty connections in the lamps themselves.

If the electrical tests reveal no defects, it is possible that one of the projectors has an optically misaligned lamp requiring re-position of the lamphouse. But if the optical alignment of the projectors seems satisfactory, the inequality of light is very likely caused by differences in the focal lengths of the two mirrors. One of the lamphouses may have to be moved an inch or two toward or away from the picture head if there is no mirror-distance adjustment in the lamps.

When the projectors have been put into first-class operating condition and equalized for light-output, they should be lined up for exact superposition of fields on the screen. For this purpose two test loops made from a long black-and-white title cut in half may be used. The title selected for this purpose should contain no animated effects and be perfectly rock-steady.

Target Test Film

Better than this, however, is the Target Test Film prepared by the Motion Picture Research Council. This test film may be obtained either in large rolls or in short lengths for making loops which will run over and over, lasting on the screen for as long a time as the projectionist desires.

The test film is projected from both machines running at the same time and with both changeover shutters open. Chances are that the two identical images will not exactly coincide on the screen, thus making it necessary to shift one of the images both vertically and horizontally until they do.

First adjust the framer of one machine, racking the picture up or down very slowly until the two images correspond in the horizontal plane. This completes the vertical adjustment.

Then very carefully turn one of the projectors a trifle to the left or right to obtain exact superposition of the images. This horizontal adjustment is a difficult and delicate job when no means for making it have been provided on the pedestal-base. Users of the Super Simplex have it easy, for they may make the adjustment with the lens-shifting arrangement which

was originally intended for speedy conversion from "silent" to "sound" picture-centering.

Placement of the Polaroid projection filters over the ports demands careful work. The metal frames holding these filters must be level in order to avoid the "ghosts" or double images which appear when the observer's left eye sees a trace of the right-eye picture, and *vice versa*. And to avoid spoiling the focus, each filter must be perpendicular to the optical axis of the projection lens. That is, if a projection angle exists, the bottoms of the filter-frames should slant out from the projection-room wall to match the downward tilt of the projectors.

It does not matter at all which projector has the "left" filter and which the "right." It is only necessary to show the Left Print through the left filter and the Right Print through the right filter. For convenience, however, it is recommended that the projector on the left have the left filter. In this way confusion is avoided on the part of relief men.

The reels of a 3-D picture are furnished in pairs, one reel of each pair being the Right Print and the other the Left Print. These are the two corresponding pictures of the "stereopair"; and the projectionist must guard against getting them mixed up when running the show.

Because one or both (usually both) of the paired stereoscopic pictures are photographed by reflection of the images into the camera lenses by means of diagonal mirrors, and because mirrors reverse everything, one or both of the two prints may have to be threaded up with the emulsion of the film facing the lens instead of the

lamp. The projectionist must keep this in mind and guard against confusion if the shiny, blank side of the film happens to be on the outside of the roll when the film is correctly wound for showing.

Non-standard emulsion position is a bad thing because film in the aperture "pin-cushions" under the influence of heat, the emulsion side of the film assuming a convex form. When the emulsion faces the lamp, the picture in the aperture is slightly concave as it faces the lens. This enables the projectionist to obtain sharp focus over the entire area of the picture. When, however, the emulsion-position is reversed, and the picture bulges out toward the lens, it is impossible to get a "flat-field" focus — the picture on the screen may be clear in the central area, but the edges will be blurred.

This nuisance is entirely the fault of the studios. The duplicate negatives of 3-D pictures ought to be made by projection printing in an optical printer, the raw stock being positioned so that the release prints, always made by "emulsion-to-emulsion" contact printing from the dupe negatives, will have normal orientation.

Getting Maximum Clarity

When it happens that one or both pictures of a 3-D stereopair have the non-standard configuration, the projectionist need make no changes in his equipment other than refocusing the lens to obtain maximum clarity of the image. It is not necessary to modify the alignment procedure, and it is not necessary to change the focus of the soundhead optical tube.

Even when the optical axes of the projection lenses are not correctly centered, reversing the emulsion-position does not perceptibly shift the screen image. (The change in the position of the lens when the focus is changed is much too slight to produce misalignment of the images.) And the studios compensate electrically during the re-recording procedure for the loss of high frequencies resulting from poor scanning-slit focus in the soundhead. To repeat: the projectionist may ignore the emulsion-position of the film except when threading and when focusing the picture.

The inspection and repair of 3-D prints is frequently a troublesome and time-consuming process. When a third film carrying stereophonic sound-

IA MEN FORM SOUND GROUP

With L. K. Brisbin, of Cinesound Co., Portland, Oregon, as first president, a new organization to be known as The National Alliance of Theatre Sound Engineers was organized in Chicago during the joint TESMA-TEDA-TOA conventions earlier this month.

Vice-president of the new group is Byron Savage, of Theatre Sound Service, Oklahoma City, Okla., with Al Suddeth, of Theatre Sound, Milwaukee, as secretary. All officers of the group are members of IATSE locals in their respective areas.

tracks is used it may be positively painful, as there are then three films to be kept in synchronism.

The paramount consideration is absolute synchronism of the left and right pictures. The two reels of the stereopair must have a frame-for-frame correspondence throughout their entire length. If the two superimposed pictures on the screen are out of sync by as little as a single frame, the 3-D illusion will be ruined whenever anything in the picture moves!

How is the projectionist to go about inspecting 3-D prints?

Place "Part 1, Left Print" on the rewinder. Rewind until a torn place or a patch is encountered. When repairing a torn place, insert exactly as many frames of black film as are removed from the picture film in making the repair. This is extremely important. Check up on your work by counting the number of frames between the footage numbers printed on the edge of the film. There should be 16 frames. (If a footage number is removed when making the splice, count the frames through two feet of film — 32 frames.)

Check on all good splices you find by also counting frames between footage numbers.

When this reel has been repaired, go on with "Part 1, Right Print," and then with "Part 2, Left Print," etc. Pay particular attention to the leaders, because if the picture starts off out of sync, you will have to shut down the show and thread up all over again while the manager and the audience grumble at the delay.

Patching 3-D Prints

Now, what about the black film you must use when patching these prints? It is best to purchase a roll of black film having thin frame-lines rather than use fragments of leader. The fat frame-lines of leaders and run-out trailers, or tail-strips, unavoidably show up along the top or bottom edge of the screen.

Even this procedure does not insure a perfect show. Every projectionist knows that a misframed splice in conventional prints sometimes escapes his notice, especially when such a splice occurs in a fade-out. Well, an out-of-sync splice in a 3-D reel may not always be discovered. Time is limited, and the projectionist works under pressure.

Nord Single-Film 3-D Set for Release

COLUMBIA Pictures' announcement that the company will provide prints for the Nord single-film 3-D system makes this method of interest to projectionists, particularly those who work in smaller theatres where two-projector 3-D showings have not been practical.

The Nord system (described in the July issue of IP) places two stereo images side-by-side on one 35-mm film strip. Through an optical printing process, images are turned sideways on the film frame so as to fill the entire area of the frame. Robert A. Mitchell's article and an accompanying diagram in last month's (October) issue of this publication gave a detailed description of a beam-splitter projection system similar in principle to the Nord process.

The larger film frame of silent picture days, minus the soundtrack area, is used in printing the two images of the stereopair together on the same frame for the Nord process. This results in two images each with an aspect ratio of 1.75 to 1. This ratio is retained when the two superimposed images are projected on the screen.

The Nord projection unit is an optical device mounted in front of the projector lens on special brackets and not physically attached to the lens. It can be placed either outside or inside the projection room. Prisms and

polarizing filters are contained within a metal enclosure where the light from the two images is split after leaving the projection lens and then re-directed toward the screen after each beam has passed through opposite polarizing filters. Very roughly, the device could be described as resembling a pair of prism binoculars working in reverse.

The system has a number of advantages over the present double-film method of projecting 3-D. The two most important are that only one projector is needed and that both images always retain exact synchronization. Also, the cost of making and shipping prints is lower because only one print is required. The film can be spliced in the normal way without worrying about sync.

A disadvantage of this system is equally obvious. The loss of light in the present two-projector system of 3-D is considerable when the light loss from the polarizing filters is added to that of the polarizing viewers. With the Nord system, this loss becomes more serious despite a slightly larger aperture because the polarizers still remain, but light is available from only one projector instead of two. It would seem that the Nord system is better adapted to a small theatre than a large one. According to the Nord company, the projection units are custom made for each installation and cost about \$1,500.

To avoid errors of this sort, it is always best to preview the 3-D production by actual projection before the first public performance. The doors of the theatre must be locked, and the management must be willing to compensate the projection crew for the extra time and work. The managers of first-class houses, however, will insist upon a preview showing. If such a showing is arranged, especially note the appearance of rapidly moving objects.

Catching Splice Errors

When an object in motion seems to approach or recede in a peculiarly unnatural manner, or to separate momentarily into a double image, immediately thrust a slip of paper into the take-up reel of each projector to mark the point where the trouble was discovered. Then shut the projectors down.

Remove the reels from the movie

machines without tearing the films, take them to the rewinder, and rewind each (toward the beginning of the film) until the suspected out-of-sync patch is found. Repair it and show the reels over again to make sure that the trouble has been corrected. Without a preview showing, the projectionist can only offer a hopeful prayer that the picture will stay in sync.

When making up the show, play the 3-D feature first. This is not good showmanship, but it is a necessary procedure in order to avoid an extra intermission in the show for changing reels. Coming Attraction trailers and the short subject must be attached to either the left or right last reel of the feature. There will then be only one break in the show — the mid-feature intermission.

Operating procedure for 2-strip 3-D is as follows:

(Continued on page 31)

Effect of Stray Light on Screen

By RAYMOND L. ESTES

Film Testing Division, Eastman Kodak Co., Rochester, N. Y.

The influence of stray light on the quality of projected pictures at various levels of screen brightness was discussed by Mr. Estes in a paper read at the April, 1953, Convention of the SMPTE. Some abstracts are presented here.

WHENEVER pictures are projected on a screen, the brightness range of the screen image from highlight to shadow is established by two limits:

(1) The brightness limit for the highlight is controlled by the light output of the projector in combination with the size and reflection qualities of the screen; and

(2) The limit of darkness is established for any projection screen by its stray-light level. The deep shadow region in the screen image may approach, but certainly cannot be darker than, this lower limit set by the stray-light level.

Stray Light Defined

Stray light is defined as the brightness in foot-lamberts produced on a projection screen by any unwanted, non-image-forming illumination that may be superimposed upon the projection-screen image. Therefore, the maximum possible tonal range for any screen image from highlight to shadow will be contained between these two limits: the screen brightness* and the stray-light brightness. Generally speaking, the greater the difference between these limits, the better will be the conditions for obtaining good quality on the projection screen. Whenever the ratio of these limits is less than 300:1, picture quality for normal density prints will begin to change. A decrease in this ratio to less than 30:1 results in almost total degradation of the screen image. For these last conditions, one may rightly question the visual value of any motion picture for telling a story.

Sources of Light

The sources of stray-light damage to picture quality can usually be limited to one or more of the following:

(1) Darkened room admitting unwanted light from outside the room or from unsuitable light fixtures in the room.

* American Standard Screen Brightness for Motion Pictures, Z22.39-1944. The brightness at the center of the screen for viewing motion pictures shall be 10 plus 4 minus 1 footlambert when the projector is running with no film in the gate.

(2) High reflectance of the walls and ceiling which reflect the screen light falling upon them back upon the screen. This effect from light-colored surfaces may be quite pronounced in narrow rooms and rooms with low ceilings, whenever the screen occupies a relatively large area at one end of the room, or has one or more sides of the screen in close proximity to a side wall or ceiling.

(3) The light produced by lens flare. In the past few years, the effect of lens flare has been reduced considerably by coating projection lenses, and it is not as great a source of stray light on the screen as formerly. For some lenses, the effect of coating has been to reduce the flare light from the lens by more than two times. Even so, scratches, dust and fingerprints on projection-lens surfaces may cause a large amount of flare light. For outdoor theaters, dust and dirt on projector lenses have to be removed at frequent intervals. Great care should be taken in this operation, because the high grit content in the dust will easily damage the lens surfaces.

(4) Where fairly long distances are involved between projector and screen, scattering by particles in the air gives rise to non-image-forming light which

may set a minimum stray-light level on the screen, below which further modifications in theater design and optical equipment cannot be effective.

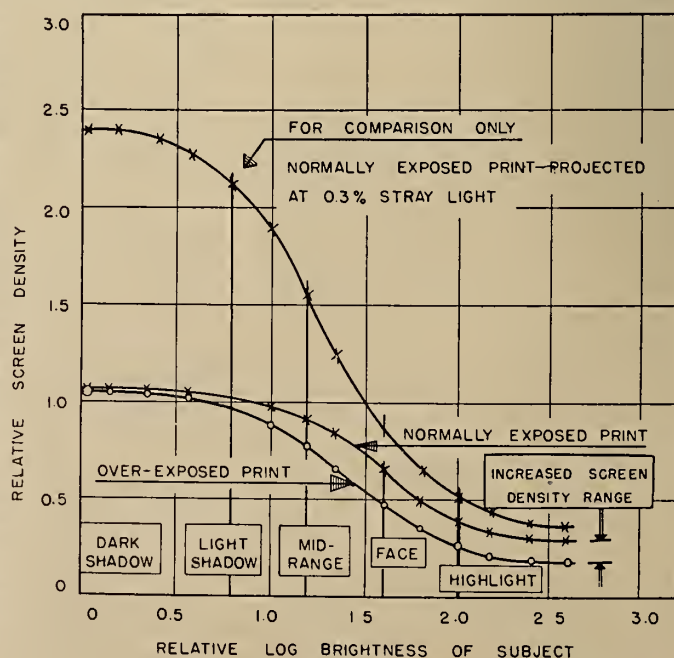
(5) Moonlight, skylight, scattered light from the projection beam and other sources of illumination, all combine to make up the stray-light level on the outdoor or drive-in theater screen.

In a desperate attempt to avoid failure where stray-light levels were high, it has frequently been suggested that specially timed, lighter-than-normal prints are the answer. This unfortunate situation needs to be looked at in a very careful manner because it is full of booby traps.

In lower section of the illustration accompanying this article, tone-reproduction curves at 10 percent stray light are compared for a normally exposed print and a print made intentionally lighter than normal in an attempt to compensate in some degree for this high stray-light level. A slight gain in screen-density range has resulted from the lower highlight density of this lighter-than-normal print.

Furthermore, midrange density has been lowered so that it can be distinguished from the maximum densities. Yet, this slight gain will not

Results obtained when an over-exposed print is used to counteract excessive stray light on the screen are shown at the right diagram. The figures on the right for relative screen "density" refer to the ratio between the brightness of the screen without film in the projector compared to the brightness of an image on the same screen. The greater this contrast, the sharper the picture. The two lower curves are for a normal and an over-exposed print projected with 10% stray light on the screen. The upper curve, shown for the sake of comparison, is for a normal print at 3% stray light.



Highlights of the TESMA-TOA Show

By FREDERICK HODGSON

THE TRIPLE convention in Chicago this month of TESMA, TEDA and TOA* resolved itself into a knock-down, drag-out battle between the little guy and the big fellow, with Twentieth Century-Fox rolling with the punches.

Projectionists who took in the circus, held in the Conrad Hilton Hotel, looked goggle-eyed at some of the new equipment, sniffed the popcorn on the trade show floor—and rolled in the aisles at some of the things said by exhibitors—and others—during the business sessions.

Before we get into the part that particularly interests projectionists (technically, that is!), we'll do a quick rundown on the general scene, the thinking—and the groaning—of the 4,000 or so exhibitors, engineers, technicians, manufacturers, salesmen, lobbyists (when one deals with Spyros Skouras one has to be a lobbyist) and others who thronged the halls, made the rounds of the scotch-

and-soda circuit and griped at the general sessions.

By all odds, the trade show was the biggest and best in the history of the motion picture industry. The smell of hot dogs, roasted peanuts and singed Skouras was all over the place. Spyros Skouras and his merry men do not singe easily.

The wails of small exhibitors were heard far into the night. Any projectionist unhappy enough to have heard an exhibitor wail will know the teeth-on-edge quality of that melancholy sound.

What did they wail about? For one thing, they wept for pictures they did not have. Product, they want! Then they sobbed that Fox was driving them out of business, giving "The Robe" to the big circuits and *giving the business* to the little guys. IP admits that they have something there.

Also, they yipped about being forced to buy expensive new equipment, from screens to "pent-house" reproducers—and they wanted to know

(Continued on following page)

* Theatre Equipment and Supply Manufacturers Association, Theatre Equipment Dealers Association and Theatre Owners of America.

look very important when considering good picture quality. Picture quality is still very poor when compared to the normal-density print projected at recommended levels of both screen brightness and stray light. The curve at the top was included so that this difference could be easily seen. Obtaining lighter-than-normal prints is not a fruitful way of getting good picture quality on the screen. The desired improvement in screen quality should be obtained by making every effort to increase the difference between the screen-brightness and the stray-light level.

Drive-in Projection

On the outdoor screen, excellent to good projection conditions are not possible on a clear evening, even with the normal-density print, until approximately 50 minutes after sunset. Some drive-ins start picture projection at 9:00 p.m. Eastern Daylight Time during June and July in the Rochester area, and the remainder are in operation before 9:15 p.m. The earliest starting time is approximately 15 minutes after sunset, and the stray-light level on the screen is actually equal to the screen brightness from the projector. During the period of full moon,

the stray-light brightness of the outdoor screen may climb to more than 1 percent for the average drive-in and probably will exceed 3 percent for those operating at screen brightness in the region of 1 ft-L. Under these conditions, the screen quality of dark prints, typical of murder-mystery films, is discouragingly poor.

Summary

There are four important points which relate to the screen quality of projected pictures. They are:

(1) Screen quality is largely dependent upon the ratio of limits established between the screen brightness and the stray-light brightness on the screen. The results show that the stray-light ratio should not be greater than 0.3 percent of the screen brightness.

(2) Stray-light problems increase as screen brightness is lowered. This is important to those who attempt to expand the size of the projection screen beyond the light-output capacity of the projection equipment.

(3) Dark scenes are affected more severely by stray light than are light or normal-density scenes. The presence of very dark scenes is of some

concern to managers of drive-in theaters where moonlight and other forms of stray light are a continual, uncontrollable problem.

ACKNOWLEDGEMENTS

The work described in this paper was done with the cooperation of a great many associates at Eastman Kodak Co. The theater survey was made possible by the interest of the Projectionists' Local 253 IATSE, the Stage Employees' Local 25 IATSE, the owners and managers of the Rochester theaters involved, and the cooperation of the SMPTE Screen Brightness Committee.

Guarantee Still Holds I

IP's contemporary, *American Cinematographer*, published a full-page advertisement not so long ago announcing the theft of valuable stereophonic sound recording equipment from the factory of Kinevox, Inc., Burbank, California. After listing details of the equipment, including the serial numbers, the advertisement carries this "Notice to Thief or Thieves":

"If the stolen equipment does not perform to your entire satisfaction, it may be returned. All Kinevox Equipment is Fully Guaranteed!"

TESMA HIGHLIGHTS

(Continued from page 15)

when all this was going to end.

On the 3-D front the picture was a bit brighter. One grand guy we know, Jackson Turner, sales manager for the Polaroid Corporation, was quite sad during the first two days of the show. Then came the news that "Kiss Me Kate" had hit the jackpot in stereo in three test spots and Turner became the happiest man in Chicago. As a result of the tests the Loew circuit, he told IP, had ordered a million pairs of Polaroid viewers.

No less than seven companies interested in the propagation of 3-D were represented at the convention, Polaroid, Pola-Lite, Nord, Stereocolor, Dorsett Laboratories, Moropticon and one with the intriguing name of Synthetic Vision, Inc. Nord's single-film 3-D system was the only one demonstrated and IP was impressed. We came prepared to scoff and remained to applaud. We expected bad light but were amazed to find that Nord's "beam splitter" system (the Nord people don't like that term) did deliver sufficient illumination at the screen.

3-D Exponents Busy

An indication of the "push" that the 3-D people are giving their favorite product is seen in the fact that Polaroid, Nord and Moropticon, the latter working with Matty Fox and his Pola-Lite corporation, are offering free-for-nothing gifts to theatres to induce them to play 3-D.

On the show floor, the most interesting exhibits were of the big new projection lamps designed to pour out huge amounts of light needed by the new processes. New projectors were on display, beautiful pieces of machinery to our avid eyes.

However, to IP the most important part of the whole show was the business side, when exhibitors raked into Twentieth Century-Fox like crazy. Spyros Skouras roared right back. At another session a panel of experts, including Earl Sponable, Mr. Skouras' right hand man on technical matters, faced a grand ballroom-full of theatre owners, mostly little guys with their backs to the wall and their hands in their pockets.

Aspect Ratios Again

The showmen wanted to know if Fox would let them mask CinemaScope down from the 2.55 aspect ratio

set by Skouras' ukase. Would it be okay, they demanded, if they cut it to 2 to 1?

Everybody gasped when they heard Mr. Sponable say he "thought it would be okay"—adding that he wouldn't want to see them cut the ratio any more than that.

Editor's Note: According to reports from IP's espionage agents on the Coast "How to Marry a Millionaire", the second CinemaScope picture, was previewed on November 3 at the Fox Wilshire Theatre, Beverly Hills, with a picture size of 50 feet by 23 feet, an aspect ratio just a trifle more than 2 to 1. Also reports have it that "The Robe" is playing in San Diego on a 43-foot by 22-foot screen, also just a fraction above the 2 to 1.

However, over and above all the shouting and the mighty spectacle of Leo, the Lion, at bay, there were amusing sidelights to the big show.

For instance, IP has realized for a long time that exhibitors knew very little about their equipment, depending on their projectionists, or on their suppliers and service companies for technical guidance. We did not realize exactly how abysmal exhibitor ignorance was until we listened to them.

One fellow started a long debate on drive-ins by demanding that the

TOA bring pressure on automobile manufacturers to eliminate "Polaroid" windshields. Fellow theatre owners nodded in sage agreement as the fellow said these "Polaroid" windshields were lousing up 3-D in his theatre.

Another exhibitor, talking about screens, warned exhibitors not to make the mistake he made. Not wanting to go to the expense of painting his screen aluminum, or buying one of the new screens for his drive-in, he figured that light gray looked like aluminum—so he had his screen painted light gray. It didn't work.

Another fellow, grouching about the cost of new equipment, put a curious question to a group of top flight engineers at another session. His theatre is in an area, now being converted from direct to alternating current. His chief projectionist, he said, told him he needed rectifiers and he wanted to know if that were true. Huh?

In all the talk during the six-day shindig IP heard but one reference to projectionists—and projectionists are the people who have to use all this new-fangled stuff! The one reference was made by Bob O'Donnell, of the Interstate Circuit, Dallas, Texas. O'Donnell told of bringing 300 projectionists into Dallas for instructions and demonstrations on 3-D projection.

An Echo from Chicago

THE FOLLOWING letter written by Walter Reade, Jr., president TOA, to Spyros P. Skouras, 20th Century-Fox.

November 10, 1953

Dear Spyros:

I wish to take this opportunity to personally thank you for a very pleasant evening in the theatre yesterday. I certainly enjoyed "How to Marry a Millionaire" and I did think that unquestionably it will have a good boxoffice success throughout the United States.

I do, however, also wish to take this opportunity to say that I am more convinced than ever of the limitations of stereophonic sound. Including the symphony orchestra, which was the introduction and the end of the feature, I cannot honestly say that anything but a good fidelity and high quality sound system was noticeable. I am convinced that any theatre that is equipped with a good and high-quality sound system, on a single track, could have played this picture on a 2.55 screen—and with an equally good audience reaction.

My reason for writing you today is that not only am I convinced that the position which you so definitely stated concerning stereophonic sound at our convention last week in Chicago, is untenable, but that you are rendering a great disservice to exhibitors, large and small, by compelling capital outlay on what may well be useless and unnecessary sound equipment (amounting to millions upon millions of dollars) at a time when so many of them could better utilize these same funds for so many other important and necessary improvements within the field of exhibition.

Sincerely, WALTER READE, JR., President, TOA



LETTERS TO THE EDITOR

To the Editor of IP:

I was very well pleased with the "Monthly Chat" in the September issue. Everything is true that was mentioned and I am in full accord. Too many of the faults of the motion picture industry are due to the eagerness of some theatre owners and producers who want to get ahead of the other fellow by trying to be the first with anything new that comes out.

That happened with 3-D. Big campaigns stressed that the characters would come off the screen and into the audience. That may be true to some extent but people were led to expect the impossible. I have had quite a few complaints from customers who expected the entire picture to appear as though they were right in with the action and that everything would come off the screen at them.

These things are hard to overcome or to explain to the paying customers. Each new process takes time to perfect, but when producers and exhibitors over-advertise these things people expect to see what they pay for and, once disappointed, it's hard to get them back into the theatre.

I would like to have permission to reprint your "Monthly Chat" in our papers in the territory covered by Lewistown Local 636.

JOHN MARKS
Secretary, Local 636
Lewistown, Penna.

To the Editor of IP:

The "Monthly Chat" in the September issue certainly hits the nail smack on the head. (*The "Chat" did some plain talking about exaggerated masking.* Editor) Every projectionist must go along with any and all schemes devised by the exhibitor, of course, but any projectionist who advocates trimming height from the standard aperture to produce a simulated wide-screen picture format ought to be punished by being forced to watch the pictures in his own theatre from a front-row seat. Then, perhaps, he would understand what terrific ocular punishment he is inflicting on his audiences by magnifying the image by means of short-focus lenses and cutting off large areas from the top and bottom.

Standard movies are photographed to appear to advantage in the standard 3:4 format — something is bound to be lost when the height of the frame is drastically reduced. Then too, motion is

exaggerated when the width of the screen is expanded by using lenses of short focal length. It is not for nothing that most patrons avoid sitting in seats close to the screen. It is tiring to the eyes to follow moving images dashing from one edge of a wide screen to the other. By sitting far away from the screen, movie patrons "take in" the whole picture with minimum exertion of the eye muscles. Expanding the screen will serve only to force patrons further back, leaving the seats in the front half of the auditorium practically empty.

Movies photographed for CinemaScope and other wide-screen processes are carefully "composed" pictorially to avoid the rapid, screen-width movements which result from action photographed too close-up for comfortable viewing. Standard movies, on the other hand, are composed for the standard-screen format; and this format cannot be tampered with if the cameraman's work (work involving much careful thought and not a little genuine artistry) is not to be ruined. Projectionists can appreciate the fact that any image-unsteadiness which may be present in either the film-photographs or in the functioning of the intermittent unit of the projector is magnified by lenses of excessively short focal length. These lenses also introduce focusing difficulties and increase the bad effects of the film-flutter in the aperture.

It has been rumored that cinema-photographers are being instructed by producers to compose their standard format pictures in such a way that significant pictorial details are kept far away from the top and bottom of the picture in order to permit projectionists to simulate wide-screen pictures with masking if they care to do so. This procedure is just about the most effective way I can think of to stifle whatever originality and creative freedom the professional motion picture cameraman may have left in his increasingly mechanical and stereotyped art. How short sighted of me to have assumed that, with the advent of CinemaScope, Hollywood had exhausted the list of possible cinematic boners!

One of the worst features of wide-screen projection, especially in theatres where steep projection angles prevail, is the curved screen. Even though the concavity of the CinemaScope screen is not so deep as that of the specially constructed screen used for Cinerama, it nevertheless presents a departure from

flatness sufficiently pronounced to distort the picture for observers located at some distance from the axis of the projection beams. The cameraman can conceal this defect of the process by avoiding unbroken horizon lines and other straight non-vertical lines, but this amounts to one more fetter added to the large number of cinematographic shackles that have bound the art of the motion picture hand and foot and have progressively dehumanized it into a machine-made product. And the wideness, in itself, of the wide-screen is a further congealing factor in a once enchantingly fluid dramatic medium.

All of my experience showing pictures leads me straight to the conclusion that the movie-going public does not desire physical hugeness in screen images. It is true that the screens in many theatres are a trifle too small, but to enlarge them to a satisfactory size is a comparatively minor matter. The average patron wishes to exert only a minimum of visual effort in viewing pictures, and he demands bright, sharp, undistorted images. Most of the effort involved in seeing moving objects must be made for him by the camera and the projector, instruments for "predigesting" visual experiences. For this reason the visual and aural stimuli emanating from the screen must be concentrated in a limited area. To exceed these bonds is to distract and irritate.

ROBERT A. MITCHELL

Editors Note: We like Mr. Mitchell's habit of coming right out and saying exactly what he thinks — particularly when we agree with him! While IP is not as strongly opposed to wide screens as is Mr. Mitchell, provided the aspect ratio is kept within reasonable limits, we think very definitely that exaggerated masking is nothing short of criminal. As to short focal length lenses, particularly of the extremely fast variety, our correspondence from projectionists over the country is heavy. Some of the boys are having real trouble. IP hopes to have an article on this very shortly. Meanwhile on the business of wide screens. Can anyone imagine, for example, Paramount's Academy-award winner "Lost Weekend" in CinemaScope?

Heart Doctor Uses 3-D

Apparatus designed to give medical specialists third dimensional pictures of the heart in action has been developed at the University of Mississippi. Known as the "stereovector-cardiograph", the instrument has a five-inch cathode-ray tube that emits two separate beams observable on a screen.

IN THE SPOTLIGHT

BUCK passing in the industry is an old story. The latest concerns the lagging interest shown by the movie-going public in 3-D features after the initial presentations. Projectionists are being blamed for the 3-D flops throughout the country—they are accused of everything from ignorance of their craft to sheer stupidity in the presentation of pictures in this medium. Whatever the mistakes that might have originated in the projection room, the public's indifference to 3-D pictures can in large measure be laid to the haste of Hollywood studios to produce pictures in this medium. The eagerness of the producers to be there "the fustest with the mostest" is probably the underlying factor for their haste in bringing out a product that was not quite "ripe enough to be plucked."

Also, the Polaroid viewers used with the early 3-D movies left much to be desired. They were poorly made and clumsy to handle—much to the annoyance of the movie patron. We understand, however, that the Polaroid people have put out new 3-D spectacles that are both comfortable and easy to handle. These new viewers are now being distributed, a major circuit hav-

ing purchased 1,000,000 pairs for the showing of "Kiss Me Kate" in its theatres. The excellent reception throughout the country of "Kiss Me Kate" in 3-D, with the use of the improved viewers, plus a better understanding of the 3-D process by projectionists should go a long way towards reviving the public's interest in 3-D films as an entertainment medium.

- Eddie Miller, IA representative and business representative for Local 279, Houston, Texas, was elected chief barker for the Variety Club of Houston. Eddie is very popular in motion picture circles in Texas. This latest honor is but one of many that have been conferred upon him by his associates in the industry.

- The IA and the Association of Motion Picture Producers on the West Coast recently concluded negotiations on a four-year contract retroactive to October 25 last. This new pact provides for a 5% increase for IA studio workers and is subject to the reopening of negotiations on wage scales and working conditions at the end of the second year. Announcement of the agreement was made jointly by IA President Richard F. Walsh and Charles Boren, labor negotiator for the AMPP. President Walsh, who flew to the West Coast to take part in the negotiations, stated that details of the agreement would be withheld until they were ratified by the various Local Unions concerned.

- Lester Isaac, former director of projection for Loew's, Inc., and now general manager of Cinerama Theatres, holds honorary membership in 48 IA Local Unions throughout the country. Local 224, Washington, D. C., is Isaac's parent Local.

- Social security pamphlets containing information of importance to all union members, particularly those

nearing retirement age, may be obtained free of charge at local security offices, or by sending 10c for each copy to the Superintendent of Documents, Washington 25, D. C.

- Conrad Krieger, secretary of Local 586, Grand Island, Nebr., was elected fourth vice-president of the Nebraska State Federation of Labor, and Alvin Kostlan, member of Omaha Local 343, was re-elected sergeant-at-arms.

- Local 105, London, Ont., Canada celebrated its 50th anniversary early this month at a banquet attended by its entire membership. A highlight of the affair was the award of a gold membership card to William Newman, charter member of the Local. Hugh Sedgwick, IA 7th vice-president and former business representative for Local 303, Hamilton, Ont., made the presentation on behalf of Local 105.

Out-of-Town Visitors

- Walter Roberts, Local 178, Salisbury, N. C., dropped in to say hello to IP's staff. We had a very interesting chat with Russell Ruben, member of Local 199, Detroit, Mich., discussing the merits of the various screen techniques. Ruben attended the recent TESMA-TEDA-TOA convention in Chicago and he was quite impressed with the exhibits.

- The industry turned out enmasse, it seemed, to take part in the recent joint TESMA-TEDA-TOA convention at the Conrad Hilton Hotel in Chicago. A detailed report of the convention proceedings, which were extremely



Albert F. Ryde (right), business representative for Buffalo Local 233, is shown presenting a gold honorary membership cord in the Buffalo Local to Lester Isaac, general manager of Cinerama Theatres. In making the award Ryde praised Isaac for the fine business understanding he had created between Cinerama and the projectionist craft in every city where "This is Cinerama" has opened.



Polaroid's technical representative, Stanley Cohen (center), explains how to properly use the sync monitor and 3-D filters to Horvey Hill, Jr. (left), and Luther Clark (right), projectionists at Interstate's Majestic Theatre in Dallas, Texas. Hill is secretary of Dallas Local 249.

lively, to say the least, will be found elsewhere in this issue. This department will concern itself chiefly with a few personal observations.

National Carbon Company's headquarters seemed to be the gathering place for visitors from all parts of the country. We met there exhibitors, manufacturers, and projectionists—we heard all sorts of accents from the lazy Southern drawl to the broad "a's" of New England. In the usual *NCC* fashion at such gatherings, refreshments were varied and plentiful. Bill Kunzmann was back at his old job of glad-handing all the guests, ably assisted by J. R. Johnstone, Paul Reis and others.

The Motiograph crowd also went all out to make their guests welcome. Fred and Thor Matthews, when not in the exhibition hall showing off their wares, were at the Motiograph quarters greeting their many visitors, which was in itself a full-time job.

The International Projector and National Theatre Supply delegation headed by Admiral Tompkins and Arthur Reyer for IPC, and Walter Green for NTS, were about the busiest people at the convention handling the crowds that swarmed into their joint booths.

Hal Huff was on hand ready to demonstrate and extoll the virtues of his exhibits. Assisting him were his charming wife, Edith, and Alonzo Bennett, secretary of Local 521, Long Beach, Calif. We were very glad to renew our acquaintance with Clyde Cooley, secretary of Local 343, Omaha,



Herman Gelber, president of IA Local 306, New York City, is shown on the left chatting with Herbert Barnett, president of the SMPTE, at the banquet which was the main social event of the SMPTE's semiannual convention.

Nebr., who was accompanied by his very attractive wife. Nat Golden, director of the Scientific, Motion Picture and Photographic division of the U. S. Department of Commerce; Mary and Clarence Ashcraft, of Ashcraft Mfg.; Wm. Hausler, Century Projector; Oscar Neu, Neumade Products; J. K. Elderkin, Forest Mfg., and M. D. O'Brien, director of projection and sound for Loew's, Inc., were but a few of the many old friends we met and chatted with at the convention. Space limits our mentioning the many others we had the good fortune to meet during the week—all in all, it certainly was good to get together again with our many friends in the industry.

- Cinerama is scheduled to open at the Warner Theatre in Pittsburgh, Penna., some time in December. In order to accommodate the three individual projection rooms that will be installed in the orchestra, the seating capacity of the theatre will be reduced to about 1700 from its usual 2200. A three-year contract with Pittsburgh Local 171 calls for a crew of 10 men.

- Two years of negotiations between Detroit Local 199 and Detroit exhibitors was finally concluded last month with an average \$10 per week increase for the projectionists. The agreement calls for an immediate \$4 per week increase, with a second increase for the same amount to become effective January first next; boosts in overtime pay bring the total average increase to \$10 per week, per man. The contract runs for two years.

- San Francisco Local 162 recently awarded an honorary membership card to Robert O. Bemis, who is associated with the Walter G. Preddey Theatre Supply Co. of San Francisco.

25 Years Ago—November, 1928

- John Pane-Gasser, member of Chicago Local 110, made his operatic debut in Verona, Italy, where he scored a sensational success singing the leading tenor role in the Puccini opera "Turandot." He financed his musical studies by working as a projectionist in Chicago theatres... Boston Local 182 was exonerated of charges of conspiracy brought against the Local membership by member John Sweetman. Sweetman charged that the Local "deprived him of his

PERSONAL NOTES

HAROLD P. SHERER, for the past several years vice-president in charge of engineering for the Hertner Electric Co., Cleveland, has been elected executive vice-president of the company. With Hertner for 13 years, Mr.



Harold P. Sherer,
executive
vice-president
of the
Hertner
Electric Co.

Sherer is a graduate of Ohio State University in electrical engineering and is well known in the motion picture field. The Hertner company is a subsidiary of the General Precision Equipment Corporation, New York.

GEORGE E. LAWRENCE, of Rochester, N.Y., has been appointed deputy director of the Scientific, Motion Picture and Photographic Products Division of the Business and Defense Service Administration, Department of Commerce. Lawrence, an Annapolis graduate on loan to the government from the Bausch & Lomb Optical Co., Rochester, will serve under Nathan D. Golden, director of the division.

membership rights and benefits and with keeping him out of employment," and asked \$25,000 damages... The IA General Executive Board convened at the Roosevelt Hotel in New Orleans, La. . . . Local Unions were alerted to be on the watch for a party by the name of Weaver, who posed as a 4th vice-president of the Alliance. He was particularly active in Albuquerque, New Mexico, and Locals in that area were warned to pick up the "phony" dues card he carried if he appeared in their jurisdiction... Combined Convention Proceedings, beginning with the first convention held by the IA in Chandler Hall, Boston, Mass., July, 1895, and including the most recent convention, the 29th, at the Tuller Hotel, Detroit, Mich., July 1928, was offered to the membership at \$8.50 per copy. This work opened with a history of the Alliance since its inception in 1893 and outlined the progress and growth of the organization with each succeeding convention.

What's Your Problem?

Q. We have a problem. One lamp of our equipment, Brenkert Model N, using 8-mm and 7-mm carbons, has a decided flicker. All connections have been checked. We have RCA rectifiers of 70 amp. capacity. We pull 63 amps. Proper voltage. G.E. emergency rectifiers are of 50 amp. capacity. Carbons for the emergency setup are 7-mm and 6-mm. We get the flicker on either setup. Our other two projectors do not flicker. We can convert our third projector using rectifiers but do not get the flicker there. It is between conversion panel and lamp. We have cleaned the insulation points on the lamp in case some foreign matter at this point could have caused the flicker. The same thing happened once, years ago. It is not caused by drafts. Electricians have been in, and both projection crews have checked, but we cannot find the cause. P. A. Wills, Local 482, Rialto Theatre, Champaign, Ill.

A. Brother, that's a job for a service engineer. No ordinary electrician (we mean the sort of guy who fixes electric irons or puts in house wiring) can, as we see it, put his finger on your trouble. From here, and from the information you give us, you seem to have rectifier trouble affecting your shutter phase. Where is your rectifier located in relation to the projector giving you trouble? How about carbon alignment? We have submitted your question to some of the top engineers (even took it to Chicago with us and popped the question there) and we get the same reaction: "Looks like rectifier trouble" and "Call in an engineer."

Q. Why are so many projector motor start switches installed (almost standardized) so that they are "off" when up and "on" when down when general practice and underwriters rules are the opposite. Frederick J. Closser, Local 253, Rochester, N.Y.

A. This is determined largely by the location of the switch on your particular projector: If the "on" switch position is up there is always the danger of accidentally causing a show stop by accidentally brushing against the switch. Hence, projector manufacturers often reverse the usual "off" and "on" switch positions. This is quite general in industry where an inadvertent switch-off could cause more trouble than would an accidental switch-on.

Q. In the September issue of IP magnetization of machine parts is discussed. It says that projector manufacturers urge demagnetization be done

even with equipment using optical sound. Perhaps I should hang my head in shame, but in the 40 years that I have been a projectionist I have never heard of this and cannot see any reason why parts that might acquire a small charge could affect anything. The photocell transformer is very well protected against external fields and I should imagine that this is about the only component that might be affected by an extremely strong field. Again I request enlightenment and I would suggest also that we projectionists be briefed on the proper way to demagnetize sprockets, etc., if they are to be demagnetized every six months as stated in IP—I have a plate demagnetizer used to wipe off sound from 1,200 feet of paper tape. I wouldn't want to have it around any magnetic film! The same article mentions the use of film cement that does not dissolve the iron oxide material—do you know of any that will not effect this coating? Maurice Rushworth, Local 181, Chief Projectionist, New Theatre, Baltimore, Md.

A. Thanks a million for your letter. It is responsible for two special articles in IP, the first of these (Hints on Handling Magnetic Soundheads) appears in this issue. We have not printed your question on lenses because this will be answered in an article in a later issue. Your other major question is answered in Mr. Tuthill's article on magnetic apparatus. As to cements, most brands now on the market (some advertised in IP) will not harm magnetic tracks. Check with your Fox exchange on this.

Q. For years I have wondered why film is sent from the exchange "heads up" with a sticker "ready to show." Most projectionists want their film, especially new prints, on house reels. Why doesn't the exchange send the film tails up to eliminate the double rewind operation. This would encourage the use of house reels and save wear and tear on the edges of the film. A. L. Shavers, Local 279, Houston, Tex.

A. If you think you have troubles, how about projectionists in some exchange areas where film handling is so careless that some prints go out tails up with a sticker "ready to show"? This business of "tails up" or "tails down" is largely a matter of choice with each exchange. Usually, however, the prints go out to the theatres either way, depending on how the inspecting is done, on how the film is received from the theatres, etc. For example, if you show

Projectionists whose problems appear below will each receive a \$3.00 check from IP. We'd like to know "what's YOUR problem?"

on house reels and rewind on the exchange reels, your film automatically reaches the exchange heads up. Inspection automatically reverses this and the next theatre gets that print tails up. IP has seen film come into an exchange, seen it stamped "okay" without inspection, then sent on its way to the next booking. Results, particularly with 3-D, are sometimes startling—and, as usual, the projectionist gets the blame.

Technical Papers Read At SMPTE Convention

Presented below are further brief abstracts of papers read last month at the New York City convention of the Society of Motion Picture and Television Engineers. These, IP believes, are of particular interest to projectionists. Other papers read at the convention were described in IP for October.

A FILM-PULLED, THEATRE-TYPE, MAGNETIC SOUND REPRODUCER FOR USE WITH MULTITRACK FILMS

J. D. PHYFE
RCA Victor, Camden, N. J.
C. E. HITTLE
RCA Victor, Hollywood

This paper describes a new type of sound reproducer which attaches to the top of standard 35-mm theatre motion-picture projectors. The unit permits elective playing of conventional photographic sound films by means of the usual projector-soundhead combination or magnetic tracks by means of the attachment. The film is pulled through the reproducer by the picture projector, thus eliminating the need for a separate interlocked drive motor.

By combining the ability to reproduce either photographic or magnetic soundtracks into one projector-reproducer assembly, a single film may be used for picture and sound using either type of sound-track. Sound reproduction using the attachment is of excellent quality and falls well within Research Council recommendations for magnetic track reproduction.

A FOUR-TRACK, MAGNETIC, THEATRE SOUND REPRODUCER FOR COMPOSITE FILMS

S. W. ATHEY, WILLY BORBERG
and R. A. WHITE
General Precision Lab., Pleasantville, N. Y.

A four-track, magnetic sound reproducer which mounts between the upper magazine and the picture mechanism of a standard theatre projector is described. Features include: minimum increase in overall projector height, no interference with normal

(Continued on page 30)

Pension Protection -- Goal of Labor

Various methods of budgeting pension plans, with particular mention of certain dangerous practices, are considered in the following article, part of a series reflecting the official views of the AFL.

IV

BASICALLY, there are three alternative systems of budgeting and financing the cost of a retirement plan. These are (1) a so-called "pay-as-you-go" approach; (2) a system of "terminal funding"; and (3) "full funding". They are by no means equally safe, equally economical, or equally beneficial to the workers covered by the plan.

The choice which unions and employers make, as between these three basic alternatives, is a very important one. It may well make or break the plan.

Pay-As-You-Go-Plans

The only purpose in describing the "pay-as-you-go" type of plan here is to enable unions to recognize and beware of it. A so-called "pay-as-you-go" plan is really not a "plan" at all. It is little more than an unsupported promise that if enough money happens to be available at the time a worker retires then he will start getting a pension.

Under this approach, the pensions that are promised to workers in the future are not regarded as a present liability. The pension bills that will eventually fall due are not reduced to terms of an estimated current cost and allocated to the present through a system of uniform, regular installment payments into a fund over the period prior to retirement, as they are in the case of a "funded" plan.

If, for example, four workers retire this year, and the "plan" promises them \$100 a month at retirement, the employer — having made no advance provision for the payment of these benefits — will have to dig down into his pocket at the time and pull out \$400 for a month's pension payments. If it just isn't there, then the employer will either find himself faced with a serious financial problem, or the workers will not receive their pensions and the employer will find himself faced with an equally serious "labor relations" problem.

Name Misleading

The term "pay-as-you-go" as applied to a pension arrangement of this type is a complete misnomer. It assumes that pensions become a cost item to the employer only at the time a pension benefit payment has to be made. Under every sound theory, the cost obligation is actually incurred at the time workers per-

form the services which entitle them to a certain amount of credit toward a future pension.

From the standpoint of comparative costs, there are three angles to consider. One is the fact that the total outlay by the employer will be greater under a "pay-as-you-go" approach, if he actually meets all his pension obligations, than it would be under a funded plan.

Under the latter system, compound interest will be earned by the regular, periodic payments made into a fund which is in turn invested in interest-bearing securities. These interest ac-

cumulations will pay a part of the pension costs which would otherwise have to be paid directly by the employer.

In answer to this, some employers may argue that they can earn a greater rate of return, in the form of company profits, by keeping money that would otherwise go into a pension fund in the business, mingled with all of the other assets and working capital of the company. They may compare the company's, say, 8 percent profit on invested capital with the 3 percent or 4 percent interest earnings of a pension fund.

Risky Investment

This may be all very well if the cost of a pension plan is regarded as "the company's money" until such time as a pensioner actually receives some of it in cold cash. However, it is the workers' money and they would be better off if it were more safely distributed than tied up in one particular company, whose

(Continued on page 28)

Bausch & Lomb Has New F/1.8 Lens

A new series of F/1.8 Super-Cinephor projection lenses designed to produce maximum brightness, contrast and sharpness, edge-to-edge, on all types of professional movie screens, is announced by the Bausch and Lomb Optical Co., Rochester, N. Y.

The lenses were developed by Bausch and Lomb engineers specifically to solve the problem of resolution at the outer margins of the screen and to increase

The extremely fast F/1.8 lens was installed in projectors at the Roxy Theatre in New York for "The Robe" showings in CinemaScope. Also installed at the Roxy were new heat reflecting filters, also developed by Bausch and Lomb, and adapters connecting the anamorphic and projection lenses.

The filters, polished discs that can be made of either pyrex or quartz, are coated on one side with alternate layers of magnesium fluoride and zinc sulfide. The other side has a single coating of magnesium fluoride. They are inserted in the projection system between the arc lamp and the film gate and, according to company engineers, transmit over 90 per cent of the visible spectrum but reflect back the infra-red heat producing rays.

The result of five years of research and experiments by the Bausch and Lomb Scientific Bureau, the new F/1.8 lenses employ five different kinds of glass. Two of these are varieties of extra dense barium crown glass, only recently perfected on a production basis in the B&L glass plant. These new glasses combine the optical advantages of both flint and older types of crown glass, without the disadvantages of either. The unusually white glass of the lenses, combined with a new design formula, eliminates color absorption and transmits the full color and brightness of the image, according to the company.

The lenses are available in a wide range of focal lengths, which will be expanded steadily in the coming months.



Above is one of the new Bausch & Lomb super-fast F/1.8 lenses described in the accompanying story. Note the 3-inch focal length.

the illumination, distributing it evenly. Tests have shown, the company said, that the new lenses, without sacrificing resolution and illumination in the screen's center, will greatly enhance these qualities on regular 2-D screens and also on the new types for CinemaScope, other wide-screen processes, and 3-D.

King Size Arc Lamp Due

Strong Electric claims unit can deliver 60,000 lumens
But no picture projection system exists that can use it.

AMONG the more interesting echoes of the big trade show in Chicago is the information that one top arc lamp manufacturer is set to go with a king-size unit the minute the picture business needs it. The projection lamp, now in the laboratory and engineering stages, is said to be capable of delivering 60,000 lumens, far in excess of anything ever made for the theatre.

Arthur Hatch, vice-president in charge of engineering for the Strong Electric Corporation, Toledo, Ohio, frankly admitted that such a lamp was in existence, adding that he was "sorry that anything had leaked out" about the monster lamp house.

"A few of the features of this lamp have 'leaked' in spite of our attempts at secrecy," he said, "and these have probably given rise to rumors of even bigger lamps to come. This simply adds to the confusion in the industry—and the last thing we want to see is confusion."

Manufacturers Meet

During the show a group of manufacturers, including Mr. Hatch, got together and talked over the whole industry buying picture. The consensus was that many exhibitors, particularly the independents, are holding off purchasing much-needed new equipment on the theory that new and startling developments are dead ahead, developments involving another big equipment revolution. This theory, the manufacturers held, was responsible for holding the equipment field pretty much at dead center in some departments. The theory was pretty well exploded at several of the TOA business sessions when experts from the producing companies were bombarded with questions from harrassed exhibitors.

One theatre owner shot this question at Earl Sponable, technical chief for Twentieth Century-Fox:

"I'm buying 'CinemaScope,' he said, "and I want you to tell me if there's anything new coming up because I simply can't buy any more. I bought separate magnetic reproducers and now I have to throw them

out. I've bought a new screen and I've bought new lenses. I've bought your 'penthouse' soundhead. When is all this going to stop?"

The answers from the dais, from Mr. Sponable, from Herbert Barnett, president of the SMPTE, and from others were flat denials that anything revolutionary was due in the immediate future, perhaps not for years.

Mr. Hatch, of Strong Electric, summed it up this way:

"There has at no time in my experience been a status quo in projection arc development. Usually we have the lamp of the future on the drawing board at the same time we are an-

nouncing a current new lamp.

"New developments in lamps are usually announced when there are changes in principles of projection, increases in light transmitting capacities of projectors and lenses, increases in the popular size of screen, or a further understanding of how to put more light on the screen without damage to the film.

Ready for Two Years

"As an example, we are now for the first time publicly showing our big, new Super '135' arc lamp. The lamp you ask about, the one delivering 60,000 lumens, we have had for almost two years.

"However, theatres, projection practice and associated equipment are not ready at this time to utilize a lamp of this type. For instance, the very size of the lamphouse is such that considerable attention must be

(Continued on page 27)

Victor Markets Portable 16-mm Projector

A NEW 16-mm arc projector, designed for portable use in school, church and other auditoriums and also adaptable for use by roadshows and small theatres, is being marketed by the Victor Animatograph Corp., Davenport, Iowa. Known as the Victor 1600 Arc, it is said to be capable of delivering 1600 lumens on the screen for a full 58 minute show using one set of carbons and operating at 30 amperes.

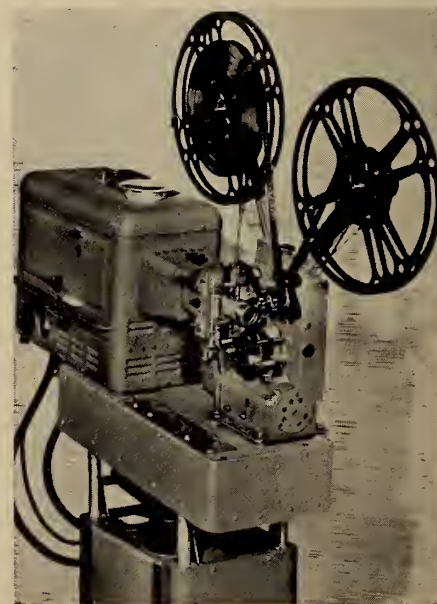
The Victor projector consists of three portable components, rectifier, speaker and arc lamphouse, which can be assembled in as little as five minutes, the company says.

The rectifier serves as a base for the complete unit. It has stabilizing, swing-out legs with built-in floor levelers for operation on uneven floors. Illuminated top-mounted controls include a service line voltmeter with voltage selector for operating the rectifier at maximum efficiency; a circuit breaker switch rated at 20 amperes for overload protection, and an eight-position output tap for supplying proper voltage.

The source of illumination is a self-contained portable arc lamphouse which is attached to the amplifier unit by means of a finger-tip snap-lock catch. It has an ammeter for checking current, and a Mercury safety switch

inside the lamp house door for protection against exposure. The F:1.4 condenser lens is removable for cleaning.

The amplifier unit also has top mounted controls. It can also be used as a recorder or as a "plug-in" amplifier for a record player. Output of the amplifier is 25 watts with less than 5 percent harmonic distortion. A standard Victor projector movement is permanently mounted on the amplifier unit with the addition of an automatic dowsler as an added safety feature.



Victor 1600 Arc portable projector

Westrex, Magnasync Make "Penthouses"

Most firms producing motion-picture sound equipment are now marketing the "penthouse" reproducers needed to handle the four magnetic sound tracks used in the CinemaScope and other scope films. The Westrex Corp. recently announced that it is in full production on the penthouse units, and two West Coast firms, Magnasync Mfg. Co. and the Natural Sound Corp., announced that they have them available.

The Westrex reproducer, known as the R9, uses two impedance drums to provide the tight film loop which is desirable for magnetic reproduction. Other features are the Davis drive and flutter suppresser, an idler which can be adjusted to the length of the film path of different makes of projectors, and a large 32-tooth sprocket which controls the film on both sides of the magnetic head and which is locked when either of the associated rollers is in an open position to facilitate threading.

Since the upper magazine is offset toward the rear, the use of the R9 reproducer does not interfere with the operation of projectors throughout the range of vertical projection angles normally incurred.

The reproducer has been designed for use with standard theatre equipment without replacing or making any modern projector or sound head obsolete. When the stereophonic features of the R9 are not in use, they are bypassed in the film threading operation and the photographic sound head functions in its normal manner. The R9 unit measures 6¾ inches in height, 13 inches in width and 6¾ inches in depth.

Under precision bridge tests, the flutter content is said to be below 0.10 per cent as compared with the Academy standard of 0.15 per cent. Particular attention was paid to the film path to minimize wearing of the magnetic head.

A new material known as "nylatron" is used on all pad rollers. This material is nylon impregnated with graphite and is said to require very little attention. The R9 is a film-pulled mechanism and does not require any special motor or drive. Oilite bearings are used on the filter rollers and the guide rollers. The impedance drums have ball bearings and as a result require no special lubrication.

The R9 stereophonic reproducer is distributed abroad through Westrex offices in 36 countries and is available in the United States through the Century Projector Corp. and Motiograph.

Magnasync announced that its penthouse soundhead is designed around the "Synkinetic" dual-flywheel principle

which it says was originated by the company's engineers and is now widely used in magnetic film recording and reproducing machines. The principle is said to make use of different mass and inertia in the two flywheels to prevent interaction and also employs a silicone packed "clock spring" filter-arm damping mechanism.

It was also announced that Magnasync stereophonic sound systems already in theatres can be converted from separate reproducer to penthouse reproduction at low cost to the exhibitor since the company will accept return of the unneeded portion of the separate reproducer for cash credit.

The Natural Sound Corp. announced that it is distributing a penthouse reproducer for Kinevox. Its specifications include stainless steel for rollers and other moving parts and Oilite bearings which will require no lubrication for at least two years of use. The 4-channel brush soundhead is exactly the same as the unit standard throughout the industry.

"Penthouse" heads are designed to fit specifications set by Twentieth Century-Fox.

CHARLES E. "CHICK" LEWIS

The death on October 22nd of Charles E. "Chick" Lewis, editor and publisher of *Showmans Trade Review* and executive vice-president of the Variety Clubs' Will Rogers Memorial Hospital, came as a distinct shock to the motion picture industry. Mr. Lewis, who was 57, had been at work in his office the day before he was stricken with a fatal heart attack at his home in Scarsdale, N. Y.

Born in Brooklyn, N. Y., Mr. Lewis started in pictures as a studio boy with IMP, later working with the Jungle Film Co. and the World Best Film Co., both Carl Laemmle enterprises. After working for some years in the booking and exhibition fields, Lewis joined the staff of *Motion Picture News* in 1928, launching his own publication some five years later.

Mr. Lewis is survived by his widow, Mrs. Marjorie Winston Lewis, by two daughters, Patricia Ann and Judith Ellen, and by one brother, Harry M. Lewis, and a sister, Mrs. Lillian Bernstein.

Although there is dispute about the "first," Thomas A. Edison is said to have shot the first motion picture in 1889 using a film base provided by George Eastman.

Lens Cleaning: Do's and Don'ts

THE constantly increasing demands put on projection lenses to transmit more light to the screen and the urgent need to maintain sharp definition despite greatly enlarged screen sizes, renders it imperative to exercise caution when cleaning projection lenses in order to avoid damage that may permanently lessen their efficiency.

The coated surfaces of modern lenses, while even harder than optical glass, still are microscopically thin. A very small amount of abrasive action will cut through the coated surface and destroy its anti-reflective properties.

Solvents such as alcohol, carbon tetrachloride, lighter fluid, etc., should be used very sparingly and only when absolutely necessary. This is the most drastic cleaning action to which a lens can be subjected. If even a very small amount of solvent finds its way into the segments of the lens it will attack the optical cement and induce rapid deterioration and may also attack the lacquer of the lens mount. It can also cause permanent damage to the seal.

All that is needed in the way of lens-cleaning materials are a small camel's-hair brush; a quantity of 2-inch squares of clean, dust-free cotton cloth; a clean-

ing solution made by dissolving a piece of mild, pure soap the size of a large pea in a pint of pure (distilled) water, and a bottle of distilled water for rinsing off any scum which may remain after gently cleaning the lens with a soap solution.

The soap solution should be used sparingly for removing oil, fingermarks and similar stains from the lens. It should be used only for this purpose and not for the routine removal of dust.

Laundry soaps and soap powders should never be used for making up the cleaning solution because they may contain trisodium orthophosphate, borax or an excess of caustic soda — substances that can react chemically with glass. Soapless detergents may also be dangerous because, although harmless themselves, most of the commercial preparations are adulterated with harsher agents.

It should be remembered that dust particles are often harder than the lens coating and hence are very abrasive. For this reason a lens should never be touched with a completely dry cloth. For the routine daily cleaning, place your main reliance on your camel's hair brush and on your special lens paper.

IA-IP RADIO HAMS

By
AMOS
KANAGA
W6BAA

Sec., Local 409,
San Mateo,
Calif.



ALL PRIZES for last year's IA-IP ham radio contest were finally distributed a few months ago. According to the boys' requests we should have had nothing but "grid dippers." Distribution took quite a while because of the choice given on the awards.

Well, fellows, now that the bands are opening up, (we hope) with even 10 meters allowing some early evening short skip, and of course the 40-meter phone band all the rage now a lot of us will be able to get the additional QSO's needed for the "IA-IP Worked 10" award — also those last few but hard-to-get contacts for the "Worked 25" gold award.

A tip that has paid off came in from Jim Evans W6GSW of 242, Pittsburgh, Kansas, that the time differences, particularly with daylight saving time, plays a big part in these IA contacts. The West Coast gang is on 75 usually after midnight, so to get a QSO it would be necessary to stay up until two or three a.m. This may be OK for the drive-in men but personally my XYL might object. So try 40 about noon to two p.m., you Easterners, and we Westerners will be looking for you.

Those in the know seem to think that band conditions will start really opening up before winter. We hope so. While monitoring the band the other day we heard two IA brothers in contact. After their QSO one of them was hooked, and the first thing he said was: "I never worked any IA men before; you're the first one!" When we told him that the QSO just previous was an IA man he wouldn't believe it. Did you get his subscription, Mr. Editor? We told him all about the IA-IP radio mens' list.

What's happened with you Canadian VE lads? We haven't heard of any of you on the bands for quite a while. Is it 3-D there too? Don't forget gang it's still Monday mornings from 9 a.m. on ten when open and now 40 meters on about 7275 — yep, we are on 21 MC too, phone and CW — if it's not too fast.

73 gang.

Depth Perception, An Eye Doctor's Opinion

3-D is at least 2,500 years old, according to an article in the *Journal of the American Optometric Assoc.* Egyptian and Grecian works of art pre-dating the Christian era show use of "interposition," which is still the most powerful of the many clues to perception of the third dimension in motion pictures, still photographs and paintings, according to Dr. T. R. Murroughs, author of the article.

He describes interposition as "overlay of contours — nearer objects overlapping or cutting off parts of more distant objects to make them appear in the background," when depicted on flat surfaces.

He also described experiments in which various clues to depth perception were tested. When one clue is pitted against the others, he asserted, interposition was found to be by far the most potent. It is commonly used even by amateur photographers, and will continue to be one of the most effective, regardless of the elaborate equipment now being perfected by the motion picture industry.

Among other clues to depth are color, light intensity and positions of shadows. In nature or in motion pictures, speed of motion is an important clue. A distant airplane, for example, appears to move more slowly through the visual field than a plane which is close.

"Further pastures actually are greener to the eye," Dr. Murroughs said. "Colors lose their purity as light passes through the atmosphere, so that distant objects appear a darker shade of color than similar objects nearby. Bright sunlight falling on your lawn tends to produce a yellowish percept, whereas the other fellow's grass is always greener. Trees at

a distance appear bluish-green." The atmosphere also makes distant objects appear hazy. In fog, a mountain top appears more distant than it actually is, and this may account for many airplane accidents.

Until recently, scientists assumed that man's perception of depth was dependent on binocularity — the comparison of the different images received by the two eyes which in an adult are about 2½ inches apart. Binocular vision is now considered merely a check on other clues and, insofar as can be determined, one-eyed persons learn to perceive depth as accurately as those with normal vision, the doctor claims.

Seagulls and fishes, said Dr. Murroughs, learn not only depth perception but also learn to compensate for refractive differences that occur when light passes into or out of water. Their judgment of distance is entirely monocular.

Binaural Sound in 1881

Isn't there anything new under the sun? The film industry and radio have been exploiting stereophonic and binaural (two-ear) sound as new developments. But examination of some old files of the French publication, *L'Electricien*, turns up an article about a binaural demonstration at the *Exposition Internationale d'Electricite* which opened in Paris in September, 1881.

Permanent telephone lines were hooked up between the Paris Opera House and the exposition, and music flowed whenever opera was being performed. The music was picked up by ten microphones placed near the footlights. To secure a binaural effect, listeners at the exposition had two telephone receivers; that for the right ear was connected to a microphone on the right side of the stage; the other was connected to a microphone at the left. Ten transmitters fed eighty telephones which accommodated forty listeners at one time, twenty in each of two rooms.

Ampex and Altec Sign

The Altec Service Corp. has signed an exclusive contract with the Ampex Electric Corp. to supervise installation of Ampex stereosound equipment in theatres throughout the United States.

Supervisory work has been completed on the Ampex installation in the Rivoli Theatre in New York. Altec engineers are now performing these same duties in Skouras theatres located in the New York metropolitan area, and also at the California Theatre, San Jose, Cal.

IA - IP HAM LISTINGS

- K2BFI — Bill Terrill, L.337,
Utica, N. Y.
- K6BZ — Frank Curtin, L.344,
Olympia, Wash.
- W5BJ — George Badough, L.604,
Corpus Christi, Tex.
- W5BON — Jack Poindexter, L.604,
Corpus Christi, Tex.
- W6ITD — Winston Leverett, L.695,
Los Angeles
- W6LHF — Del Nelson, L.169,
Oakland, Calif.
- W6OOM — Edwin Griffith, L.709,
Ventura, Calif.
- W9AKJ — C. R. Putnam, L.490,
Elkhart, Ind.

These are new names to be added to the complete list of IA ham radio operators published in the January, 1953 issue of IP. Another complete list will appear within a few months.

BOOK REVIEW

CANADIAN FILM WEEKLY 1953-4 YEAR-BOOK: *An up-to-date compendium of information about the Canadian film industry.* Edited by Hye Bossin. 211 pages. Film Publications of Canada, Ltd.

This book provides a detailed picture of the exhibition business north of the border, and also covers the growing field of Canadian film productions. In addition to much background material and statistics, the Yearbook carries a list of Canadian theatres, giving the population of the town where they are situated and the seating capacity and circuit affiliations of each house. An introductory survey makes the point that the film business in Canada is suffering less than in the U.S. from TV and other competition because of heavy immigration into the country and business expansion there.

Lend-Lease in Lenses

In an effort to speed development of wide-screen use, the Allied Independent Theatre Owners of Iowa-Nebraska has organized a lens exchange service for its members. The "lend-lease" system will help meet the shortage of projection lenses in the shorter focal lengths.

Canada Builds Film Center

Work will be started before the end of this year on a new \$6,000,000 film production center in Montreal, Canada. The center, being constructed by the National Film Board, will supplement facilities now in operation in Ottawa.

Canada's 83 New Theatres

Including 56 drive-ins, a total of 83 new theatres have been built in Canada since the beginning of the year. Construction is now proceeding on 11 drive-ins and 16 indoor houses, with 10 drive-ins and 18 standard theatres in the planning stage.

OBITUARIES

EARL MATHEWSON, 56, member of Toronto Local 173, died suddenly last month. He became a member of the Local back in 1921, and up to the time of his death was an ardent sportsman, being keenly interested in hunting and fishing.

JAMES V. FENSORE, former business representative for Local 277, Bridgeport, Conn., and member of the Local for the past 34 years, died last month, following an illness of several years. Fensore was one of the organizers of the Bridgeport Local and served in various official capacities.



more

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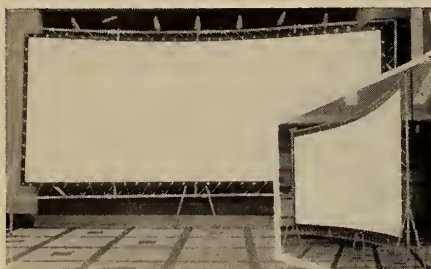
Plant:

Northampton, Massachusetts

New York Office: 30 Church St., New York 7, N. Y.

New Products for the Industry

RADIANT WIDE SCREEN FOR 16-MM. This screen is being marketed for use when industrial, sales and similar films are projected with an anamorphic lens. It is made of a highly reflective, silver-finish fabric and it is produced in sizes ranging from 5 to 20 feet in width for pictures shown in an aspect ratio of 2.55 to 1. When the screen is not in use, the



This is the new portable Magniglow Astrolite screen for 16-mm projection using anamorphic projector lenses. It is made by Radiant Manufacturing Co.

fabric can be rolled and the light-weight frame folded for storage in a metal case that is provided. Further information may be obtained from the Radiant Mfg. Corp., 2627 W. Roosevelt, Chicago 8, Ill.

CINEMATIC ADAPTER FOR STEREOSOUND. An adapter system which enables theatres to reproduce the four magnetic sound tracks of CinemaScope film over the present amplifying and speaker equipment of small theatres has been announced by the Cinematic Corp, 122 Washington St., Bloomfield, N.J. The adapter consists of a four-channel penthouse reproducer which picks up the sound from the magnetic tracks. Then an automatic switch-over feeds the sound from the penthouse equipment on either projector into four plug-in pre-amplifiers and fader. From the pre-amplifiers the sound is fed through a mixer that blends the sound from the four tracks into a single input matched to the theatre's power amplifier and speaker system.

AMPEX STEREOSOUND SYSTEMS. Complete theatre sound systems for the showing of CinemaScope and other processes using stereophonic sound are being marketed by Ampex Corporation, Redwood City, Calif. All components, from magnetic soundheads to loudspeakers, in the Ampex Multi-Directional Sound systems are built by the company itself. The systems, available in five sizes, range in basic cost from \$4,500 to \$10,300, tailored for any size theatre. Among the components of the system

are the Ampex "button-on" soundhead which can be fitted to all modern projectors. Speakers are the new Jim Lansing design built by Ampex under license. Ampex claims that the system provides safeguards for any emergencies, and that failure of projector changeover equipment, amplifiers, or loudspeakers can be corrected in a matter of minutes in most cases.

NEUMAIDE FILM SPLICER. This splicer, designed for CinemaScope film, permits the user to scrape the emulsion from the tops of the film and then remove the magnetic soundtracks from the back of the overlap without taking the film out and turning it over. Neumade Products Corp., 330 W. 42nd St., New York 36, N.Y., calls it the Neuscope splicer.

STRONG "SUPER 135" ARC LAMP. Designed to give the tremendously increased volume of light demanded by CinemaScope projection, this new lamp is now being installed in many key theatres throughout the country. Featuring the Infra-Ban beam cooler unit, the Super 135 burns the new 10-mm Hitex carbons at 135 amperes, or the 11-mm carbons at 120 amperes. It can burn the 10-mm Hitex at 120 amps or the 11-mm at 115 amps for a full hour.

RCA PORTABLE SOUND SYSTEM. Interest is being expressed in the United States about a "sound-on-wheels" package introduced in England by RCA Photophone and engineers of the Associated British Cinemas. Initially used in Brighton, Birmingham, and Belfast for showings of the "House of Wax," the



One of RCA's pretty employees is holding the smallest TV camera tube ever developed for broadcast use. Only a fraction of the size of the standard movie pickup iconoscope tube (shown on the table), the new Vidicon tube weighs only two ounces but is said to be almost three times as sensitive.



Above is a projector aperture plate for the new wide-screen aspect ratios as produced by the LoVezzi Machine Works, Chicago, and available through theatre equipment dealers. These plates, made for Simplex, Super Simplex, E-7, and Century projectors, are produced in ratios of 1.66 to 1, 1.75 to 1, 1.85 to 1, and 2 to 1. They are also available in undersize widths for filing to correct keystone.

three experimental models are now being "bicycled" from theatre to theatre throughout the British Isles. Each set of equipment comprises a 3-D selsyn interlock conversion kit, the necessary control units and an auxiliary amplifier system, all packaged for convenient installation in conjunction with existing apparatus for stereophonic sound.

POLA-LITE 3-D ALL-PLASTIC VIEWERS. Three new models of these glasses, the Hi-Lite for adults, Juvenile for children, and a clip-on model, are now available. An eight-page booklet, "Helpful Hints on how to improve your projection of 3-D Pictures", may be obtained at any branch office of National Film Service, or by writing to the Pola-Lite Company, 630 Ninth Avenue, New York City.

AMERICAN SELENIUM RECTIFIER. This new heavy-duty arc lamp rectifier, using 50,000-hour stacks, is offered to the industry by Norpat Sales, Inc., 113 W. 42nd St., New York City. All models have full glass insulated transformers. Ripple, the company asserts, is held to 1 per cent with 12-phase full wave amplification giving 720 impulses per second. An extremely low flicker is claimed. By means of a 21 position, 8-point switch, wired to each phase of the 3-phase line transformer, output current and voltage are controlled to the arc.

450,000 16-mm Projectors

Estimates place the number of 16-mm movie projectors in use in the United States at 450,000. Of these more than 100,000 are in schools.

ABC Builds on Coast

The American Broadcasting Co. has started work on a new \$1,500,000 television and radio building in San Francisco for stations KGO and KGO-TV.

KING-SIZE ARC LAMP

(Continued from page 22)

given to projection room space requirements and to special pedestals for mounting the lamp. Today's projectors, having optical clearance for only F/2.0, or very slightly faster, systems, could not possibly pass the high speed beam from this lamphouse and present projection lenses would likewise be inadequate in acceptance angle.

"Furthermore, even if all projection equipment could be coordinated to this powerful lamphouse, there is no combination of film base and heat removing means available that would allow projection of film to be accomplished without film destruction.

"Using an analogy, present theatre equipment in its overall aspect could be likened to our present system of highways. If some auto manufacturer started making a car capable of 200 miles an hour, the chief advantage of the car could not be utilized since the present highways could not accommodate it.

"So far as indoor or outdoor theatre requirements for all the present new principles of picture presentation are concerned, lamps available right now, and not only from Strong Electric, can handle any situation."

EVERYDAY SCIENCE

TELEVISION is another field where unusual uses are being found for basic equipment. Recently a TV camera was installed in an obsolete Grumman fighter along with radio control devices. The resultant robot "suicide" plane was catapulted from the aircraft carrier *Boxer*, carrying a 200-pound bomb. It was then guided into a flack-ridden territory in North Korea to destroy a ground installation.

• • •
Atomic radiations and Geiger counters are the operators in an automatic-elevator control system recently devised. Small radium buttons, shielded in lead, are mounted at each floor level. A narrow slit, about the width of a sheet of paper, releases a stream of radiations. In the elevator itself is a small Geiger counter that stops the cage at the point where radiations are most intense, leveling cage with floor. The manufacturers claim that this system not only eliminates lots of complex wiring but also brings the elevator to a more level stop.



NEW! f/1.8

Bausch & Lomb

 *Super Cinephor*

Projection Lenses

First and only lens giving full edge-to-edge sharpness on widest screens!

Now . . . the *one* lens series that gives you today's brightest, sharpest image on any screen: CinemaScope, 2-D, expanded 2-D, and 3-D! Finest edge-to-edge definition ever achieved. White glass—no color absorption . . . transmits full image color and brightness. Fastest projection lens made. Complete range of focal lengths. You're all set *now* and throughout the foreseeable future with this revolutionary new f/1.8 series—new world's standard for the motion picture industry.

Exclusively Recommended for

CINEMASCOPE

20th Century-Fox recommends the new B&L f/1.8 Super Cinephor projection lens with B&L anamorphic adapter exclusively for clearest, sharpest, finest CinemaScope screen images.

WRITE for complete information. Bausch & Lomb Optical Co., 61623 St. Paul St., Rochester 2, N. Y.



BAUSCH & LOMB CENTENARIAS

Scene from "THE ROBE,"
20th Century-Fox
CinemaScope Epic



M-G-M, Paramount Develop New Camera

Announcements of new camera processes that are said to greatly increase definition and decrease film graininess in both wide-screen and standard projection have been made by two Hollywood studios, M-G-M and Paramount. At the same time Technicolor, Inc., announced that it has developed new dye-transfer color prints that can be used with these camera processes.

In the cases of both M-G-M and Paramount, the method involves a radical change in photography but no alteration in projection techniques. Cameras developed independently by each studio employ single-strip 35-mm color negative, moving horizontally through a modified black-and-white camera. Scenes are recorded on an area equal to two frames of normal color negative.

Working with a double-frame negative, Technicolor's new printing process makes possible the manufacture of a standard 35-mm Technicolor release print in which the images are of normal size and position, permitting either photographic or multiple magnetic sound tracks.

The purpose of the printing process is to record substantially more picture detail on the negative than customary heretofore in order to obtain 35-mm prints which clearly and accurately reproduce all the elements of the scene, especially when large-screen projection is required.

Technicolor will not supply cameras for the new color processes. These have been developed independently by the studios. After tests made by Paramount,

employing a camera modified by Paramount, it was decided to photograph "White Christmas" using this process. Loren Ryder, technical director of Paramount, told IP that the results of the first week's shooting were so good that a standard camera used as a safeguard was pulled from the set.

At the same time, M-G-M technicians announced that experiments had been completed on a new all-purpose camera, designed along the lines described above, and it will probably be used in a retake of the film, "Ben Hur," scheduled for next year. Although specific details on the M-G-M camera have not been released, it was described as employing a 60-mm wide-angle long focal-length lens, with the negative running through sideways on a curve. The film is reduced to standard 35-mm picture frames in the printing. M-G-M claims that test footage has been demonstrated in sizes up to 100 by 50 feet in projection with excellent results.

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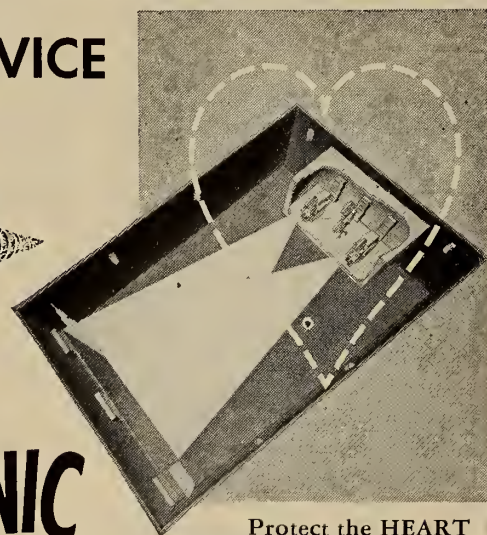
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PENSION PROTECTION

(Continued from page 21)

failure would wipe out the fund completely.

Furthermore, if the company pays out all its profits in the form of dividends to stockholders, or bonuses to executives, every year, for example, then no interest is being accumulated by the pension money, in the form of company profits or anything else. In such a case, the pension money is actually being used to subsidize the dividends and bonuses of stockholders and executives.

Another factor affecting the relative cost of pay-as-you-go and funded plans

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is the tax question. Approved funded plans are tax-exempt and contributions are fully deductible even if they currently exceed the total of benefits being paid out of the fund.

The third, and probably the most significant, contrast between funded and unfunded plans from the cost standpoint is the budgeting aspect of the problem. It is here that the relative disadvantages of the pay-as-you-go approach are most obvious and most serious.

A fully funded pension plan is based upon a more-or-less constant and uniform level of contributions. The costs are known, at least roughly, and can be adapted to the resources available and normal expectations. The highest single element of the cost (past service cost) is anticipated and usually disposed of during the early years of the plan's operation. The regular expense of the pension plan can therefore be fitted into a stable pattern along with all of the other normal operating costs of the company.

Terminal Funding

The "terminal funding" method of financing a pension plan lies about halfway between the pay-as-you-go approach and full funding. Under this method, a fund for each retiring worker is created at the time he retires, but not before. The employer puts up, on the day a worker retires, the amount necessary to pay that worker's pension for as long as he lives. This may be done by buying him a life annuity from an insurance company at that time, or by depositing the amount required to pay the pension to his account in a trust fund.

This approach is an improvement over the pay-as-you-go approach, but — from the trade union point of view — not much of one. While a pay-as-you-go plan implies that the worker has no right whatsoever to any guarantees with regards to his pension payments, even after he retires, the terminal funding system implies that he has no rights whatsoever under the plan until he actually retires.

About the only situation in which this approach — or something similar to it — can be considered possibly acceptable would be where it is used in conjunction with some other means of segregating funds for the ultimate payment of pensions, on a current basis. For instance, it might be used as a part of a system in which the members of an employers' association under contract with a union make periodic payments of a certain definite amount of money into a jointly-administered central fund.

Funded systems, however, are the safest and most effective type of pension plan from the worker's point of view in most situations. Briefly stated, a system is said to be fully funded in advance if money is being currently contributed to the pension fund in an amount sufficient to pay for all of the "future service" credits that are currently accruing, plus a portion of the total "past service" liability.

The money put into the fund for each pensioner under a fully funded system would be considerably less than under the terminal funded system, because this

money will accumulate interest prior to retirement as well as after. If annual contributions are made with the first payment beginning when the worker is age 40 and the last when he reaches retirement age, interest will pay about 25 percent of the cost of the sum needed at retirement, assuming a $2\frac{1}{2}$ percent interest rate.

The actual cost of one full life pension of \$1,000 a year will be about \$9,000, as compared with \$12,000 under the terminal funding system and \$14,400 under the pay-as-you-go plan.

[TO BE CONTINUED]

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SMPTE ABSTRACTS

(Continued from page 20)

projector operation and excellent film motion. The use of this unit for the initial experimental recording work which produced the first composite CinemaScope film demonstrations is also described.

A PNEUMATIC PULLDOWN 16-MM PROJECTOR

RAYMOND W. WENGEL

Camera Works, Eastman Kodak Co.

An experimental model of a 16-mm projector is described in which air pressure is used to effect pulldown of the film. Some results of speed tests for this type of pulldown are discussed.

APPARATUS FOR APERTURE-RESPONSE TESTING OF LARGE SCHMIDT-TYPE PROJECTION OPTICAL SYSTEMS

D. J. PARKER, S. W. JOHNSON
and L. T. SACHTLEBEN

RCA Victor Div., Camden, N. J.

An apparatus is described with which large Schmidt-type projection optical systems may be tested. The apparatus is adapted to present continuously the response curve on an oscilloscope, where it may be photographed against a grid for further study. The optical system may be tested for response to both radial and tangential line detail, in field zones that extend out to half the normal raster diagonal from the center.

PRIMARY COLOR FILTERS WITH INTERFERENCE FILMS

H. H. SCHROEDER and A. F. TURNER
Bausch & Lomb Optical Co.

A set of vacuum-deposited, thin-film, multilayer, transmission filters has been developed for use as highly efficient primaries in additive color projection. Light which is not transmitted is reflected. Consequently the filters can be used in high illumination beams without overheating and changing color. Modification of the spectrophotometric curves can be effected as desired in specific problems. The filters will be demonstrated.

SYNCHRONIZATION MONITORS AND CONTROLS: DEVICES TO MEASURE AND CORRECT SYNCHRONIZATION ERRORS IN 3-D PROJECTION

R. CLARK JONES

Polaroid Corp., Cambridge, Mass.

An electronic synchronization (sync) monitor has been developed. Its meter shows the magnitude and direction of any sync error, large or small, and a buzzer sounds when the error exceeds one-quarter frame. Alternatively, a simple sync indicator may be used which, however, requires modifying the projector shutters and some training of the projectionist. To correct the sync error, a special control is provided, which connects to one of the two projector synchros.

PROPERTIES OF POLARIZERS FOR FILTERS AND VIEWERS FOR 3-D MOTION PICTURES

L. W. CHUBB, D. S. GREY, E. R. BLOUT
Polaroid Corp., Cambridge, Mass.

Satisfactory 3-D motion-picture projection requires polarizers of high transmission, color neutrality, thermal and temporal sta-

bility, and good optical quality to prevent degradation of the projected images. Polaroid glass laminated K-type polarizers are suitable for projection filters.

PRACTICAL APPLICATION OF NEW MOTION-PICTURE TECHNIQUES

RALPH H. HEACOCK

RCA Victor Div., Camden, N. J.

A brief summary, including slides, covers practical application of Synchro-Screen, 3-D pictures, Cinerama and both double-film and single-film magnetic stereophonic sound. The engineering principles involved will be outlined so that a broad accurate picture may be obtained indicating what the new techniques have done to our theatres during the past year.

The first movie exhibition device was called the Edison Kinetoscope. The picture was seen by peering through the eyepiece at the top. Edison then had no faith in pictures projected on a screen.

In 1896, American Biograph produced a film showing a locomotive speeding at the camera and appearing to bear down on the audience.

History's first record of true photography came in 1802 when Thomas Wedgwood described a process for copying etchings on white paper or leather moistened with silver nitrate.

"Talkies" were shown in Mexico in 1905, a gramophone carrying the sound in rather dubious sync.



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STEREOSCOPIC PROJECTION

(Continued from page 13)

Trim both lamps with new carbons. Don't run the risk of having an arc snap out while the picture is showing.

Thread up the first two reels of film — the left and right prints of Part 1 — placing the same leader-number or "start" frame over the aperture of each projector. Make certain that the films are in sync, for if one film is only a single frame behind or ahead of the other film, the show will be spoiled.

When threading up 3-D reels, be sure that each reel is placed in the correct machine. Also make sure that the intermittent sprockets are in the at-rest position, and that the two projectors are interlocked.

If an electrical interlock is used, follow the manufacturer's instructions for threading up the projectors. In certain set-ups, the selsyn synchronizing motors (but not the projector driving motors) are turned on for the threading operation. With the selsyns on, the intermittent of one projector is brought to the at-rest position, and the other projector is then slowly turned by means of the hand-wheel or soundhead flywheel until the locking action is felt. The projectors are then threaded *and are not* "run down."

The projectionist, when threading, should make certain that the emulsion-position of the film is correct — facing the lamp if the print be normal, facing the lens if the print be non-standard.

Checking the Picture

When show-time arrives, both projectors are switched on simultaneously by means of the single switch installed for that purpose. And just as soon as the picture appears on the screen, while the various titles are showing, three things — framing, focus, and light — must be checked and adjusted if necessary.

1. FRAMING. Examine the picture first *without* the 3-D glasses so you can see both images. Slowly frame one of the projectors so that the title words line up along the top and bottom edges of the letters. The framing must be done with extreme care and very slowly.

The title images will probably appear to be out of horizontal alignment, but the position of the projectors should not be changed. This out-of-

line appearance is merely the image-separation which produces the desired 3-D effect.

2. FOCUS. It is essential that both images be in sharp focus to avoid discomfort in viewing.

Don the 3-D glasses and look at the picture with the left eye alone, covering the right eye with the hand. Focus the "left" machine. Then look at the picture with the right eye and focus the "right" machine.

3. LIGHT. It is equally important that both images have the same in-

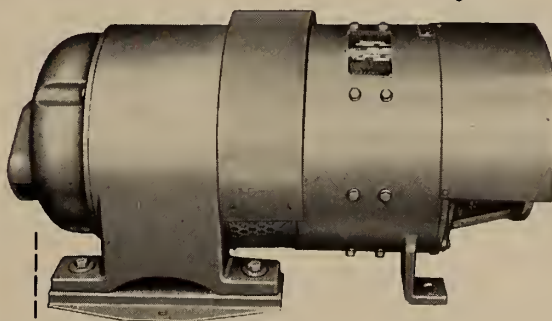
tensity and distribution of illumination. When one of the two stereo pictures is less brightly lighted than the other, the stereoscopic illusion is weakened and the audience experiences a sensation similar to that produced by soiled viewing glasses.

By alternately covering and uncovering the left and right eyes while wearing the 3-D glasses, inequalities in lighting greater than 8 to 12 percent are readily detected. Close attention should be given to the burning of the carbons as the show progresses.

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Projectionists should always be on the lookout for evidences of lost synchronism. A difference of one frame between left and right pictures is bad; a difference of two or three frames gives a really terrible effect. Lost synchronism is seen in moving, not in motionless, objects. Unless the lost synchronism occurs very near the end of a "part," there is nothing to do but shut down the show and re-thread the projectors.

(Editors Note: An out-of-sync condition in 3-D can be corrected while a show is in progress if a projection room is equipped with one of the new sync monitors and a differential switch on the projection interlock, both of which are available through the Polaroid Corp. See the August issue of IP, page 21.)

If a film-break or any other untoward event happens which requires stopping the projectors, use the first

frame of a scene-change as the "start" when re-threading. This is a lot safer and quicker than attempting to use frames marked on the basis of footage-number imprints.

If it be discovered that the Left Print has been threaded up in the "right" projector and *vice versa*, don't stop the show. Merely interchange the two Polaroid projection filters while the projectors are running. After all, it doesn't really matter which machine is "left" or "right": it is only necessary to show the Left Print through the left filter and the Right Print through the right filter.

Take Your Time

Above all, don't hurry unnecessarily and risk making serious mistakes when threading up the two reels of Part 2 of the 3-D feature. You have ten minutes of intermission in which to trim the lamps and thread up the film. And no amount of impatience on the part of the audience (understandable as it is) can shorten this necessary intermission. The wise exhibitor will keep his patrons entertained with a vaudeville act during the interlude; the short-sighted one will try to force people to the concession counter.

When the 3-D feature ends, close the dowsers and "kill" the arc of the projector having the reel to which the "2-D" shorts are *not* attached. If the switching arrangement permits, cut out the interlock and switch off the driving motor of the "dead" machine. This machine can then be threaded up with one reel of Part I of the 3-D feature to save time.

The foregoing is not intended to "teach" projectionists who are already familiar with the manifold details of 2-strip polarized-light 3-D projection, nor is it intended to supersede the instructions issued by equipment-manufacturers and technical organizations.

If these notes do no more than point out the necessity of increasing projection-room manpower and the desirability of adequately compensating projectionists for handling a complex, difficult, and *unsuitable* process, they will indeed have served a useful purpose.

[THE END]

Matthews Heads TESMA

Fred C. Matthews, vice-president and general sales manager of Motiograph, Inc., was elected president of TESMA at the association's convention this month in Chicago. Mr. Matthews succeeds J. Robert Hoff, of Ballantyne.

Elected vice-president was Larry W. Davee, of Century Projector Corp., succeeding L. E. Jones, of Neumade.

New directors elected were C. E. Ashcraft, of Ashcraft Mfg. Co.; H. B. Engel, GoldE Mfg. Co.; W. E. Gedris, Ideal Seating, and Arthur E. Meyer, International Projector Corp.

Walter Reade was elected president of the Theatre Owners of America at that organization's convention, held in conjunction with the convention of TESMA and the Theatre Equipment Dealers Association.

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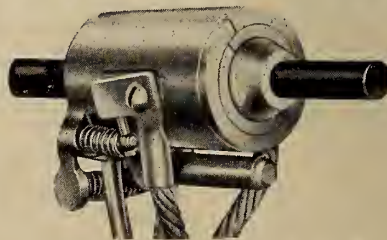
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MAGNETIC HINTS

(Continued from page 8)

be constantly alert against introduction of any spurious magnetism into the reproducing head or into its shield. It should be kept in a magnetically neutral state at all times. However, these heads do acquire a small but growing content of residual magnetism during extended periods of use.

One very simple type of demagnetizer can be fashioned easily for neutralization of heads. The unit employs a simple coil as shown in Figure 2. When a distinct rumble is heard during reproduction, when there should be no such rumble, it is likely that head demagnetizing is required.

Again with the admonition to *remove all film with magnetic tracks from the projection room—remove your watch as well—before using demagnetizing equipment*, the following information on how to construct the degausser is given:

1. Use a silicon steel transformer lamination two inches long and having a thickness of .014 inches or less (too much thickness may cause eddies and other troubles). Its width should be as great or greater than the width of the gap in the reproducer head.

2. Wrap insulating paper or tape around the center portion of the lamination. Devise two fiber bobbins and wind 400 turns of No. 36 enamelled wire in layers between the bobbins.

3. Bend the lamination into the open ended shape shown in Fig. 2. Connect the winding to a 6-volt alternating current. *Make certain not to use direct current.*

4. Be extremely careful not to mar the highly polished surfaces of the reproducer head poles. Place the degausser in contact with the head poles.

5. Very slowly remove the degausser from the head and consume several seconds during removal. Repeat this operation several times, *being careful not to mar the poles of the head.* (Magnetic soundheads are expensive!)

Splicing machines should be periodically demagnetized in a similar manner. New splicers made of non-magnetic metals, possibly beryllium copper, will be available shortly.

Worn Magnetic Heads

After several hundred hours of operation magnetic heads become severely worn from continued and frictional contact with the abrasive

oxides of the magnetic film tracks. Stiffness of the film base prevents an entirely satisfactory conformity of the track around the head and, during projection, pressure is applied to maintain the positive contact required. Unfortunately, abrasion is higher in motion picture projection than is the case with the familiar home or office tape recorders. In the latter, the tape is more flexible than film and thus has a much better wrap-around.

The greatest wear of a new head occurs, according to tests, during the first 75 or 80 hours of use. A gap wear of 5 mils may be experienced during the first 80 hours because there is less contact until a new head becomes slightly worn. From the 80 hour period forward the head becomes highly polished and thus presents more contact surface. The wear tapers off gradually to possibly 10 mils for 600 hours of operation. The type of head will determine its life. Your service engineer can give you information on this. Research is now going on for the development of an extremely thin outer coating designed to glaze and lubricate the track without detrimental

separation of the track from the head.

Head wear results also in a change in its inductance value electrically in the reproducing circuit. This alters overall frequency response and, in

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localities remote from service areas, replacement may not be readily available. Correction may be effected temporarily as follows:

1. Check laterally across an opaque film bearing a test track for true alignment of track with the gap slit in the head. Use a flashlight to avoid warping or other heat damage.

2. Run a test film (highest frequency) and carefully note the output on the available output indicator.

3. Use the adjustment available and very slowly rotate the magnetic head in axial relation to the film contact. Turn slightly to the right while observing the output indicator. If a drop in level results, reverse the adjustment. Rotate the head slowly to the left and secure it tightly at the exact point where maximum output is noted.

More specifically, one of RCA's triple track magnetic head arrangements is a single unit assembly using pivots and supporting arms to facilitate corrective adjustment. Naturally somewhat more complex than single track units, it still affords single head adjustment. Azimuth or *twist* correction is effected by pivoting the head upon a transverse supporting shaft. For longitudinal correction the triple head assembly is moved in relationship with its mounting base. Once properly aligned, the heads are evenly spaced and uniformly contact the film across its width.

While you read this issue of IP, new and radically different heads are being manufactured. One uses Ferrite, an iron oxide with magnesium ($XO.Fe_3O_4$), and it has extremely high resistance to abrasion. Further details on this head appear in the October, 1953, issue of IP on pages 15 and 19.

Great interest was shown in the Ferrite head, which, according to engineers will outlast heads now on the market by from 50 to 100 times, at the October meetings of SMPTE in New York. It was discussed at length at the TOA-TESMA show in Chicago early this month and the announcement was made that a few of these heads will be available in December of this year.

Before each run, and before any tests or adjustments, clean the equipment as described below. As stated before, a film track acts as an abrasive, and is itself abraded, leaving a deposit of oxide. When this deposit contacts another track, the abrasive factor increases.

Keep the sound drum surfaces and the slit between the magnetic head pole pieces free from oxide deposit, dust or other foreign matter at all times. Clean with a soft camel hair brush and a clean *lintless* cloth dipped sparingly in carbon tetrachloride.

Unthread the equipment before cleaning. Cleansers act as solvents which will damage a track. Dry all

parts thoroughly before the next threading.

TV Stations Total 206

Total number of Tv stations now on the air reached 206 early this month when 4 new stations began telecasting. Six new Tv station grants this month brought to 412 the number of permits issued since the ban on new stations was lifted in April, 1952. Of these, 393 are commercial stations, and 19 are educational.

The first movie studio, popularly known as "The Black Maria", was built for the Edison Co. in West Orange, N. J., in 1893. Painted black inside and out, it rested on a revolving base that allowed it to follow the sun.

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R. A. ENTRACHT, Business Manager
Sworn to and subscribed before me this 17th day of September, 1953.

(Seal) ANNE CORRIGAN
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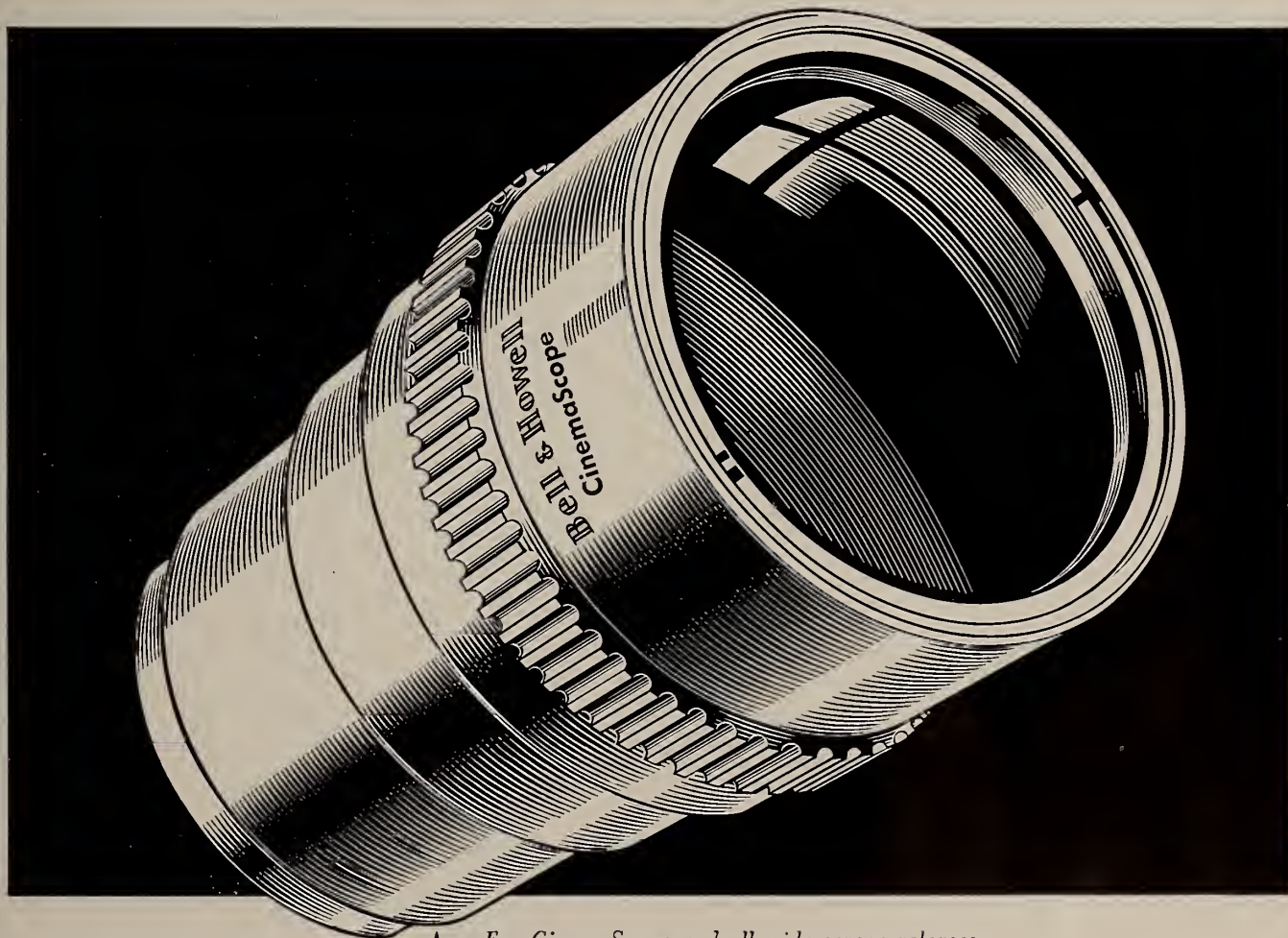
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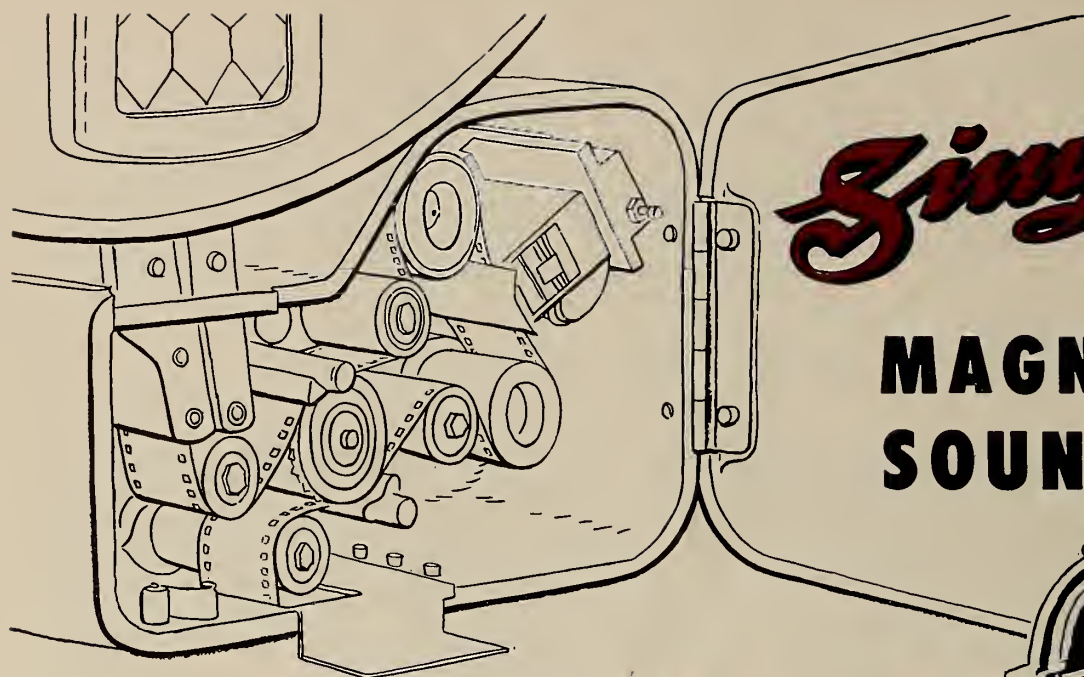
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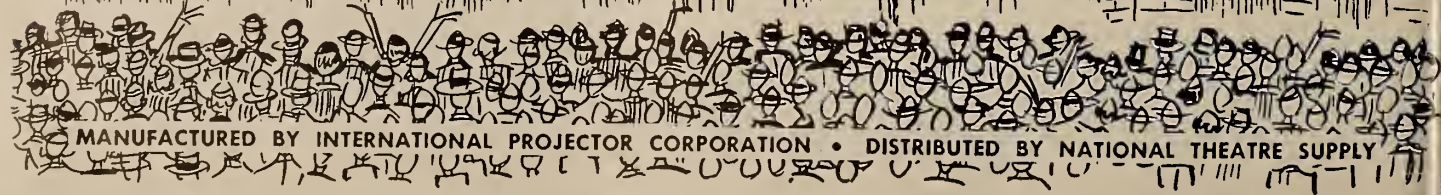
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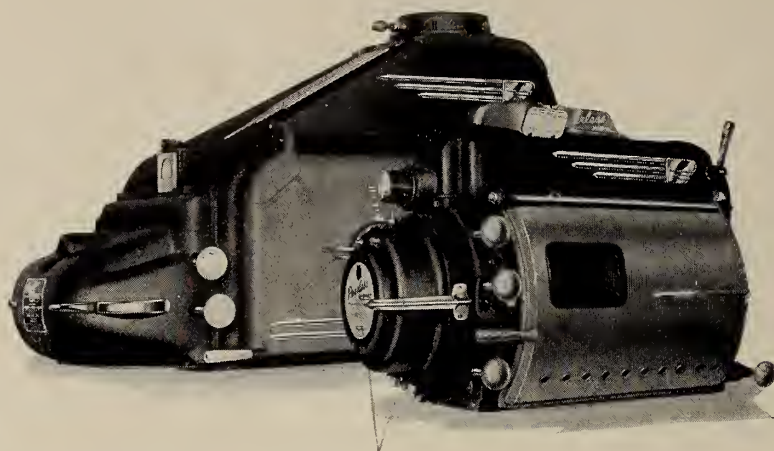
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FREDERICK HODGSON, *Editor*

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MONTHLY CHAT

THE late Heywood Broun once described the merry Christmas season as a time of "peace on earth, good will towards men and the bashing in of heads." Broun's phrase might apply to the state of the motion picture industry as we move from 1953, the year of technological revolution, into the fateful year of 1954.

Peace on earth there may not be, but indubitably the air is filled with good will of a sort. There is a slight relaxation in the industry's favorite pastime, the bashing in of heads. Even Spyros Skouras has announced willingness to test CinemaScope with standard one-track sound. This is a handsome Christmas present for those small exhibitors who must play Fox pictures to live but who cannot afford expensive stereophonic equipment. If we do not applaud too loudly it is because we think directional sound, properly handled, is a distinct advantage in the presentation of some motion pictures.

Over the months of 1953 this magazine hasn't been too kind to 20th Century-Fox. For being unkind, we apologize. For being truthful, as we see the truth, we offer no apologies. We admit that we view Spyros Skouras with a mixture of awe, admiration and a gnashing of teeth. During the year just ending we have watched him challenge the industry, dare it to oppose him. And we have seen him win.

In all of this titanic struggle the projectionist hasn't been on the sidelines. He's been in the thick of it, wrestling with problems not of his own making. He's put on a good show in spite of strange new equipment and in spite of a deliberate policy in some quarters to keep him in the dark about new processes and techniques. It will be the task of IP to keep projectionists informed, not only about new things in the industry but how to handle these new things as well.

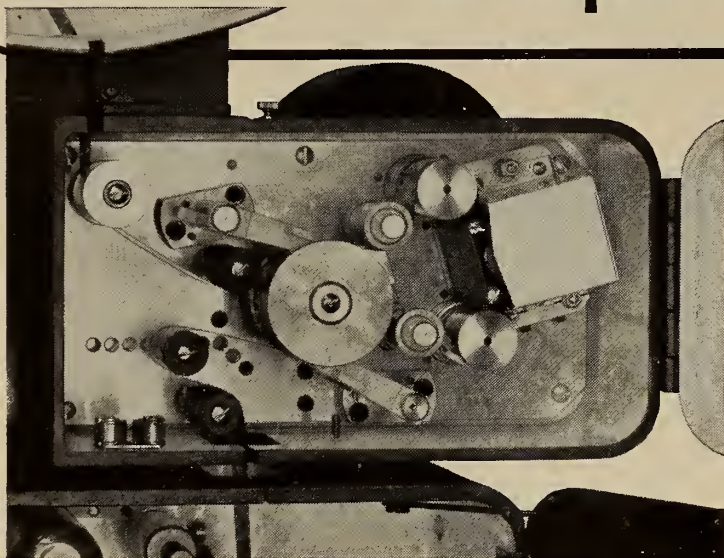
The 3-D picture is somewhat different, a little less explosive — and a bit more sombre. Here everything possible is being done to bring every scrap of knowledge to the man in the projection room. For this policy, adopted by the Polaroid people and emulated by Polaroid, we are grateful.

The portents for the industry in 1954 (and after) are discussed elsewhere in this issue of *International Projectionist*. We sincerely hope it will be a good year. We hope it will be a happy year, and we hope that every reader of IP will have the merriest Christmas ever.

And may 1954 be "in sync" and without any show stops for anybody.

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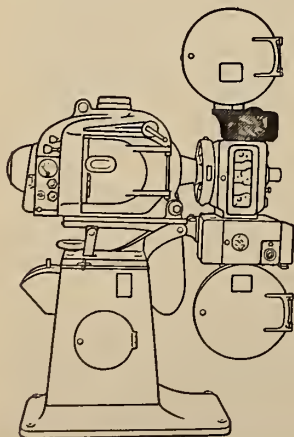
When the stereophonic features of the R9 are not in use, they are by-passed in threading the film through to the photographic sound head.

This reproducer employs the well-known Davis drive and flutter suppressor with two impedance drums, which result in a total flutter performance of below .10%

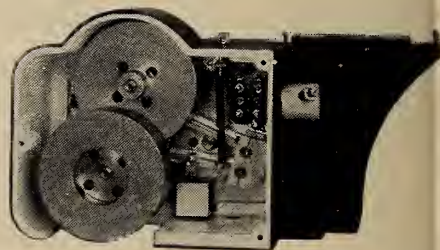
in the low frequency rates ordinarily perceived by listeners and below the Academy standard of .15% for all frequency rates.

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Westrex R9 Stereophonic Reproducer *installed between the upper magazine and the projector mechanism. It measures only 6¾" in height, 13" in width, and 6¾" in depth.*



Westrex R9 Stereophonic Reproducer — *The rear view shows the two fly-wheels, the flutter suppressor mechanism, and the output terminals for the magnetic tracks.*

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VOLUME XXVIII

DECEMBER 1953

NUMBER 12

This Is the First of Two Articles Covering --

Recent Projection Advances in Europe

European developments, from the CinemaScope anamorphic lens to single strip 3-D are revolutionizing American films: Here Mr. Mitchell looks at projection overseas

by ROBERT A. MITCHELL

THE FACT that European projection and sound apparatus has been developed to a very high order of perfection is often overlooked in the United States because American projectionists find little opportunity to become acquainted with such equipment. The prevalent American notion that European projectors are "primitive," "crude," or "cheaply constructed" is regarded with utter amazement by projectionists in other parts of the world.

No one would seriously maintain that top-quality American projectors do not compare favorably with the leading European machines; but it is equally absurd to deny the undisputed world-wide popularity of the better foreign projectors.

Such American projectors as the Brenkert, Century, Motiograph, Simplex and others are favorably known the world around for excellent operating characteristics and durability. So also are the German Bauer, Ernemann,

and Euro, the British Kalee, and the Dutch Philips.

All of these, American and European, are among the best projection machines in the world, and each, without exception, possesses specific features superior to the corresponding features of other machines.

Each Has Features

So while American projection and sound equipment has its own unique features and advantages, European equipment also holds considerable interest for the projectionist, no matter what his nationality. Projection, as indicated by the name of this magazine, is *international* in scope and character

It is curious, but true, that many of the startling "innovations" now bursting on the American screen had their genesis abroad. Henri Chretien's anamorphic lens, as an instance, was born in France and the idea was imported by 20th Century-Fox for CinemaScope.

Engineers imported from Austria are now in this country working on various "beam splitter" devices for the showing of single-film 3-D. An example of this is the Moropticon system discussed elsewhere in this issue of IP. It is entirely possible, therefore, that European projection machines (as in the case of the powerful Ventarc lamp developed in Switzerland by Dr. Edgar Gretener and brought to New York by Mr. Earl Sponable, of Fox) may have something to give American projector manufacturers in the future.

Comparisons Have Value

Comparisons may often possess considerable objective value. Most American projectors, for instance, consist of separate picture and sound "heads," often made by different manufacturers, while most European machines now utilize unit construction of the picture and sound-reproducing components. All American mechanisms

are nowadays enclosed, while the European, except several British mechanisms and the Dutch Philips, are open. The Philips enclosure is, however, removable, thus permitting operation of the machine as an open projector. The same thing can be done with the American Simplex Regular mechanism.

American Projectors

In America, with the single exception of the Motiograph, which has a rear cylindrical shutter like the European machines, disc and conical shutters are employed, the former often being very large and assuming grotesque forms of rear-and-front combinations which nearly conceal the mechanism. With the exception of the Simplex X-L, which has 24-tooth feed and holdback sprockets, American projectors have 16-tooth upper and lower sprockets, most European machines 32-tooth uppers and lowers. Most American soundheads have two sprockets, but the most widely used European sound reproducers have no sprockets at all.

American projector mechanisms, by and large, are patterned after the old Simplex Regular, an inexpensive machine which quickly gained widespread acceptance because of its simplicity and dependability. Although inclined to be noisy, it had a number of features which were distinct advances in projection technology. The Super Simplex is an improved version of the original Simplex — many of their parts are directly interchangeable, — and even the newer Models E-7 and X-L, having modified gearing, retain the time-tried basic arrangement of sprockets and film gate.

The Century, Ace, Superior, and Wenzel, among others, are direct descendants of prolific Daddy Simplex. The Brenkert and DeVry also have the same film path, as does the Motiograph AA, which represents a radical departure from the earlier and quite differently constructed Motiograph models.

The Simplex Regular was itself developed from the Edengraph, and first appeared commercially in 1911. In its triumphant march to conquer the American projection field, it defeated the Edison Kinetoscope and, later, the Powers, old-time American projectors of very un-Simplex-like construction. We therefore feel justified in regarding the basic Simplex design as

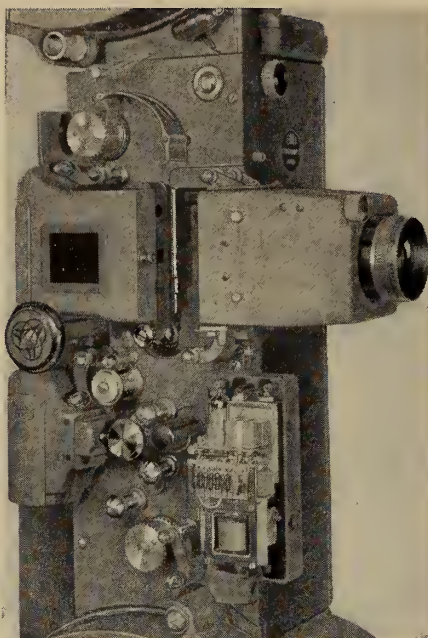


FIG. 1. The Ernemann IX sound projector with Ikosol II lamp. Note the simple, open construction of this sturdy theatre machine which closely resembles the water-cooled Ernemann X.

the American "ideal," or standard, design.

Variety in Europe

Although Europe produces a wider variety of projectors than does the United States, a somewhat analogous development has taken place there. The most satisfactory and widely used projector, the German Ernemann, attained the position of European standard at an early date. This machine was derived from Alexander Ernemann's *Imperator*, placed on the market in 1909. From the *Imperator* came the automatically lubricated Ernemann II, and subsequently the Models III, IV, V, VII-B, IX and X in addition to a number of special projectors for single-strip 3-D, 65-mm. film, oblique projection, etc.

The Ernemann III was built in the early 1920's with a large lens mount for F/1.9 projection lenses and a cylindrical rear shutter located close to the film-gate aperture where the cone of light is most constricted. The Model IV, appearing in 1934, was the first Ernemann to have the sound reproducer built into the projector mechanism. The V, a variant of the IV having a water-cooled gate casting, is the first in a succession of famous "cold projectors." The VII-B was the last machine made by Ernemann before the war. But a few years after hostilities had ceased, the new and improved Models X and IX (the

latter being a simplified and less expensive version of the former) were designed and produced under the personal direction of Dr. Ernemann at the new factory in Kiel, the X appearing in the spring of 1950, and the IX one year later. Lest there be confusion because the Ernemann X predates model IX, the latter model was a less expensive edition of the former, essentially the same machine but minus some of the gadgets to be found on the Ernemann X.

Made in Western Zone

The Ernemann Projector Works is a subsidiary of Zeiss Ikon AG., Stuttgart, no longer connected with Zeiss Ikon VEB., Dresden, or with the firm of Carl Zeiss, Jena, both of which are in the Soviet-occupied zone.

The Ernemann IX fitted with the Zeiss Ikon Ikosol II arc-lamp is shown in Fig. 1. The Model X is similar in appearance.

The general plan of the earlier Ernemann models has influenced the design of the Bauer and Euro, two other famous German projectors. The British Walturdaw V is an almost exact copy of the Ernemann V, while the Swedish Aga and the Italian Mikroteknika are among many other projectors giving evidence of dependence on the Ernemann pattern. The Ernemann VII-B is still being manufactured, after a fashion, in Soviet-occupied Germany; and several Russian machines are "Chinese copies" of various earlier Ernemann models.

To repeat: the basic Simplex design is the American standard, the basic Ernemann design is the norm for continental Europe and Asia. English projector designers, influenced by both the American and German norms, have borrowed features from both, showing a preference for the German.

Projectors "Open"

The open construction of the Ernemann is, as we have mentioned, a European characteristic. Now, many American projectionists are prone to regard the open construction as a relic of the paleolithic age; but the fact remains that most European projectors are made that way because the majority of European projectionists prefer open mechanisms, considering

(Continued on page 32)

A New Look for the New Movies...

Wide-Screen and 3-D Projection Lighting

The film industry is currently being revitalized by the third great technical revolution in its history. First, sound; then color; now panoramic and tri-dimensional realism are having their profound effect on movie-making and showing techniques.

Record Sums Spent

Exhibitors in the race to equip themselves for these new box-office bonanzas are spending thousands and tens of thousands of dollars on new optics, screens, sound equipment. Where does screen *lighting* equipment fit into this picture of modernization?

Light Losses Serious Problem

In wide-screen projection, screen light is distributed over $2\frac{1}{2}$ times the area of conventional screens. In 3-D systems, filters reduce the total screen light to about *half* its former value, even with *two* projectors trained on a new screen of much higher reflectivity. Both wide-screen and stereoscopic effects suffer serious handicaps from inadequate

lighting; nothing short of a *major* improvement in your present lighting equipment will enable you to take full advantage of their terrific mass appeal.

New Equipment Needed

For these new screen media you need not only *much more* light... you need literally *all the light you can get!* This means new equipment—equipment to operate the higher-capacity carbons at maximum currents.

Give your patrons — and these great new entertainment media — the light they need. Don't delay—call in your theatre equipment supplier for a complete diagnosis of your projection lighting needs.

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Film Splicing for 3-D and CinemaScope

by JAMES MORRIS

MAKING a good splice always has been an extremely important part of the projectionist's job, doubly important now because of the advent of CinemaScope and the resurrection of 3-D.

A bad splice in either 3-D or CinemaScope can not only cause a stop but it can do a beautiful job of lousing up the show even without a stop. Contributing to splicing difficulties is the use of acetate, or safety, film which is more difficult to handle in a splicer than was the now out-moded nitrate film.

Today, according to film manufacturers, nitrate film constitutes but a fraction of all prints exhibited in American theatres. Some place this fraction as low as one percent. Importation of nitrate film is permitted and art houses sometimes receive such prints from Europe. Too, revivals of old pictures sometimes puts nitrate prints into theatres. Film libraries, with their stocks of old pictures, still rent nitrate prints both in 35-mm and in 16-mm. Most of the films in the famous library of the Museum of Modern Art in New York are nitrate, although the museum has plans for new prints of these old pictures using acetate.

Difficult to Splice

However, despite the fact that triacetate film has eliminated the possibly lethal consequences of a bad splice, the projectionist's worries, so far as splicing is concerned, are by

no means ended. The new processes have brought new problems.

Triacetate, or so-called safety film, has a number of advantages that stem from the fact that it is more stable chemically than a nitrate base. The most important advantage is its flame-resistant quality. It burns slowly and without dangerous fumes. Also, because it is more stable than nitrate, it has less tendency to shrink out of size. But this chemical stability has one important disadvantage from the projectionist's point of view. Triacetate base, or acetate, as it is usually referred to, is harder to splice. Its very stability slows down the dissolving action of the solvent cement and makes necessary greater care if the best results are to be obtained.

No Real Difficulties

The latest problem concerns splicing the new CinemaScope film with its four magnetic sound tracks and narrower sprocket holes. The magnetic tracks are on the opposite side of the film from the emulsion. Another persistent and annoying problem concerns making a splice on one or both of the two film strips required for 3-D projection. This article is intended to review the whole process of splicing with special mention of CinemaScope and 3-D film.

Provided he has the proper equipment, splicing of CinemaScope film will present no difficulties to the projectionist. A splicer such as the recently marketed Neuscope model is

especially designed for the job. It is constructed so that both the emulsion side of the film and the base side, to which the magnetic tracks adhere, can both be scraped clean while the two ends to be joined are clamped in the jaws of the splicer. The register pins of the Neuscope are smaller and set in a slightly different position to conform to CinemaScope specifications. The standard 35-mm sprocket perforation is 0.11" as against the narrower 0.078" perforation for CinemaScope.

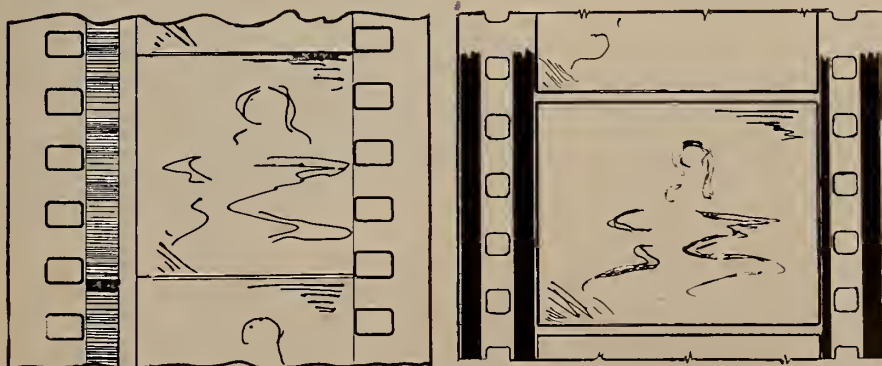
If a standard splicer is converted for use with CinemaScope film, it is first necessary to file the pins until they are narrow enough and in the correct position to be received by the CinemaScope sprocket holes. This is the way the problem was handled by some Fox exchanges on the first prints to be processed. This is not an entirely satisfactory method because if the pins are filed to CinemaScope tolerance, there will be a loose fit and lateral shifting if these pins are later used to register the sprocket holes of standard film.

Using a converted standard splicer for CinemaScope film presents another problem. After the edges of the film have been trimmed for the splice, it is then necessary to remove the film from the jaws, taking the end from which the magnetic tracks are to be scraped from the right jaw and placing it in the left where the tracks can be scraped from the splice area. Then the two ends are returned to their original position and the splice is completed.

Procedure Is Clumsy

This procedure has the disadvantage of being clumsy in addition to the fact that a better splice is likely to result if the film is kept locked in one position throughout the operation.

There is much to be said for a special splicer for CinemaScope film such as the Neuscope model, manufactured by Griswold and distributed nationally by the Neumade Products Corp. The problem of removing the film from the jaws in the middle of the operation is solved by redesigning the right-hand

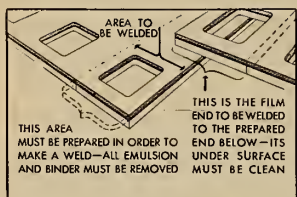


The two drawings shown above illustrate the different sprocket-hole proportions of CinemaScope and standard film. The CinemaScope sprocket holes, shown in the sketch at the right are set between the magnetic tracks, and do not line up exactly with standard sprocket holes. Also the magnetic tracks on CinemaScope film are on the base side rather than the emulsion side of the film. This creates problems in splicing which are explained in the accompanying article.

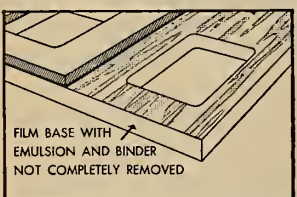
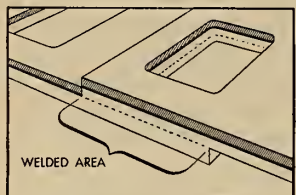


Here are two examples of bad splicing that resulted from excessive scraping and excessive use of cement which weakened the film.

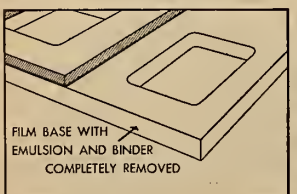
pressure spring assembly and cutting blade so that a support bar for scraping the base side of the film could be built into the right jaw as well as the left. Use of a fine wire brush, also supplied by Neumade, is advised to condition the splice area when this type of splicer is used. According to Bob Hempel, of Neumade, the brush



Good splicing requires effective but not excessive scraping. Both the emulsion and the layer that binds the emulsion to the base must be removed to expose the base for the weld.



Here are two illustrations that show how traces of emulsion and binder remain on a badly prepared splice area. The picture below shows how it appears to the eye.



Good scraping, properly done is shown at top. The drawing shows a completely clean base with emulsion and binder removed. The bottom picture shows how the scraped film will appear.



strokes create fine ridges and depressions which absorb the cement and prevent splashing which might otherwise occur. Hempel also states that the brush is valuable in removing the magnetic tracks completely from the sprocket hole area without damaging the film, a slightly tricky operation. The brush is used after first scraping with a blade.

Splicing of the two film strips used in the present system of 3-D projection has been previously discussed in IP, in articles by Robert A. Mitchell and others. However, since the proper splicing procedure for 3-D is so important that one improperly made splice can ruin a whole show, it is a good idea to review the procedure although a large proportion of projectionists have already handled 3-D prints and are familiar with it.

There really is only one important point in addition to standard procedure that must be remembered in connection with splicing 3-D prints, but in the rush that occurs when the cumbersome two-projector system is used in the theatre, and when prints are checked in undermanned exchanges, it is often forgotten.

When a splice is made in a 3-D print, it is necessary to pick out two identical footage numbers (both of the paired prints are identically marked every foot along the edge of the entire print) and check the two prints to determine whether any frames are missing from the broken print.

A broken print must be repaired by adding black frame-line leader to replace missing frames. For example, if four frames of a print are destroyed, six frames of black leader would be inserted if two more frames are destroyed in making the splice. After the black leader has been added, check this print with its companion print. If there are an identical number of frames between the footage numbers on both prints at the point where the splice occurs, that particular splice cannot throw the pro-

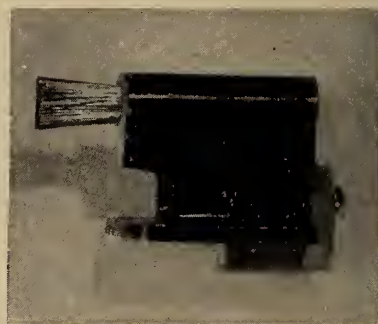
Having reviewed two splicing prob-

lems that made their appearance this year with the advent of the new processes, we can return to the fundamental procedure for making a good splice. Although greater care is needed with acetate film as was explained at the beginning of this article, and also special cement, now universally available, the procedure has changed little in recent years. For those who may wish to review their knowledge, the following instructions from the Eastman Kodak Co. will be valuable.

"Splices that are wide, stiff, buckled or out of line might cause film to jump the sprockets so that torn perforations or breaks result. Perforations in the vicinity of a splice of this kind are always strained or broken. Buckled or bumpy splices result from excessive scraping, which weakens the base, and too liberal application of cement."

Too Much Cement

When too much cement is used in a splice, it will distort or buckle the splice area after it has dried and will also squeeze out under pressure in the jaws of the splicer and attack the base on either side of the splice. However, the projectionist must take care



Above unit includes both scraper and fine wire brush which is especially recommended for treating splice area when the Neumade CinemaScope splicer is used. It is also valuable for removing the magnetic tracks without danger of damage to the sprocket holes.

on the other hand that the applicator he uses is capable of carrying sufficient cement to cover the splice area in one stroke.

Eastman Kodak strongly advises that the splicer be kept scrupulously clean. Pressure springs should be kept free of hardened cement and scrapings. The springs should also be checked to make certain that they are in position to insure contact across the full length and width of the splice. It was also noted that scraping blades are often kept in serv-

(Continued on page 41)

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Equally Efficient with Standard and new Hitex Carbon. Superior screen illumination with either standard high-intensity carbons or the new Hitex carbons.

It's RCA's answer to today's big light problems. Demonstrations on screens up to 70 feet wide prove it's everything you could ask for in big light power. For more light in drive-ins, for more light in 3-D and large-screen presentations, pour it on with the new RCA Wide-Arc Lamp System.

CHECK with your RCA Dealer for information on the Wide-Arc Lamp.

THEATRE EQUIPMENT

RADIO CORPORATION of AMERICA

ENGINEERING PRODUCTS DEPARTMENT, CAMDEN, N.J.



*Greetings for Christmas
and Best Wishes for
Prosperity and Security for 1954
from*

CHICAGO LOCAL UNION NO. 110

I. A. T. S. E. & M. P. M. O.

EUGENE J. ATKINSON

Business Representative



Two Views On CinemaScope

Exhibitors groups see expensive equipment forcing small theatres to close unless aspect ratio is cut and one track sound restored
— Service companies and manufacturers claim the exact opposite

ON THIS PAGE are presented two opposing views on the effect of CinemaScope and stereosound on the nation's small theatres, always the real strength of the motion picture industry. By the end of 1954 we should know which view is correct.

1—The Theatre Owners of America, strongly backed by certain important exhibitors, even including the Skouras theatre interests, and backed also by the regional groups of Allied, holds that there will be a high theatre mortality rate during the year, with new processes accounting for the majority of casualties.

2—20th Century-Fox, backed by such service companies as Altec and by such manufacturers as Motiograph, holds that CinemaScope and stereosound offer distinct advantages to the small house, particularly in areas remote from key centers. This view is expounded in the article on this page by L. D. Netter, Jr., general sales manager of Altec Service Corporation.

Important Struggle

The outcome of the struggle now being waged between the proponents of these opposing views is of great importance to the projectionists of the United States and Canada. This writer's crystal ball has long since been cracked beyond redemption, but we may hazard a guess or two based on the history of the industry.

Slightly over a quarter of a century ago the advent of sound caused very much the same sort of commotion we are witnessing today. The same charges and counter charges were

made, with 20th Century-Fox the villain of the piece then as now.

Fox was the top advocate of optical sound as against the disc, the groove and the needle. In the end everybody was happy, particularly the projectionists. Optical sound tracks eliminated the need for equipment to keep the turntable and the picture in sync.

Today, just as in 1927, Fox is pushing a sound system on one film, again eliminating the need for interlocks.

In 1927 dire predictions were made that the industry was headed for oblivion. Radio was the culprit. Today it is television.

Despite the ruckus over optical sound, and despite the challenge of radio, there are more theatres in the United States and Canada in 1953 than in 1927. In that fact this writer

sees the answer. There is food for thought, too, in the financial world's attitude to the movie business. As IP goes to press movie stocks were climbing slowly from their low points for the year. Fox, and Fox alone, was but a scant half point below its top mark of 20 for the year.

According to the old saying, the proof of the pudding is in the eating. As of December 1, a survey by IP reveals, more than 4,000 orders were on hand for CinemaScope projection installations and more than 240 installations had been completed.

20th Century-Fox has completed 10 films in the medium and is set to start production on 11 others. Metro has announced eight CinemaScope films and Warner is set for 18 with Columbia toying with the idea of a feature, "The Long Grey Line." Walt Disney is hard at work on CinemaScope cartoons.

If the film outlook for 1954 isn't high, wide and handsome, it's at least wide.

Small Theatres Install Stereosound

by L. D. NETTER, JR.

General Sales Manager, Altec Service Corporation

IT IS our conviction that one of the aftermaths of the November TESMA-TOA convention in Chicago will bear out the contention of the Altec Service Corporation that many of the nation's smaller theatres are now impressed with the ticket window potential of stereophonic sound.

We believe that the next few months will see the installation of many smaller and less expensive stereosound systems in hundreds of smaller capacity houses in cities and towns far removed from key centers.

This belief is not wishful thinking on the part of the Altec organization. It is based on several solid factors; the statements made to the writer by many small theatre owners who have been delaying the installation of CinemaScope and Stereosound only because of the unavailability of CinemaScope product, a situation that is now being remedied rapidly; also Altec's own record of stereophonic installations in smaller centers.

This record reveals installations, for example, in such small towns and cities as Maryville, Missouri, population 6,000; Texarkana, Texas, popula-

tion 17,000, and Omar, West Virginia, population 1,800. Three other West Virginia communities might be listed, War, 1,500; Elkins, 10,000, and Marmet, 1,200.

Literally dozens of other towns could be mentioned, all the way from Ontario in Oregon to Donaldsonville and Lafayette in Louisiana.

Another important factor in our thinking is the effective and impressive results which have been achieved by stereosound in a number of small houses. It has been noted by exhibitors and engineers that the audience impact through the use of directional sound in small theatres equals the results achieved in the country's largest houses. Because of the smaller seating area the feeling of participation and intimacy is enhanced. The audience is effectively placed right in the middle of every dramatic scene.

For these reasons, Altec believes there will be a continuing demand for stereophonic installations on the part of those theatres which have been the backbone of the industry for many years.

SAYS AN EXHIBITOR:

"New screens, new methods of projection, and new sound are not the whole answer — they merely make the picture more attractive to the public. They may make a good picture better, but they will never make a bad picture good."

Excerpt from a talk by Walter Reade, Jr., president of TOA, at the Kansas-Missouri Theatre Assn. convention, on Dec. 2.

Boxoffice TV Tested on Coast

The Telemeter boxoffice television system, which ties in with local theatres and uses a coin box attachment, launched in Palm Springs, California.

THE BOXOFFICE-IN-THE-HOME idea for selling newly released motion pictures to a Tv audience — an idea that may greatly change the film exhibition business a few years from now — is receiving a test this month in the sunny and prosperous community of Palm Springs, Calif., with Hollywood moguls in nearby Los Angeles watching closely.

The test is being conducted by the International Telemeter Corp., of Los Angeles, which is half owned by Paramount Pictures. Telemeter differs from other boxoffice Tv systems in that it is expected to tie in with local theatres if it is used commercially and the government gives its approval to boxoffice Tv.

The first picture made available to the home Tv audience in Palm Springs was Paramount's "Forever Female,"

a new comedy starring William Holden and Ginger Rogers. The picture opened at Earl Strebe's Plaza, a local theatre, and at the same time became available over the Telemeter setup.

Studios Interested

Within a few days after the test began, rumors circulated in both Hollywood and New York that other studios in addition to Paramount were impressed by the tests and that a move was underway for motion picture interests to acquire one of the two other boxoffice television systems, either Phonevision or Skiatron.

However, charging money for the right to view Tv in the home is not now legally possible except under special circumstances. The Federal Communications Commission is expected

to hold hearings on boxoffice Tv before the end of 1954, but at the moment this form of presentation is not permissible because the air is considered "free" and no direct charge is allowed for entertainment transmitted to a home over radio waves. The Telemeter test was possible in Palm Springs because the community is not in a regular Tv reception area and programs are received over a closed circuit.

Palm Springs homes receive their Tv programs over a closed coaxial cable circuit from a community antenna at the western edge of the town where Tv signals from Los Angeles can be picked up. Telemeter taps this circuit without actually going on the air.

Coin Box Attachment

Suggestions of veteran movie men on how to strengthen the sales appeal of boxoffice television were used in developing the Telemeter system. The coin-box attachment for the Tv set makes it possible to announce and

(Continued on page 40)



Season's Greetings

To Our Projectionist Friends Everywhere


from

NATIONAL THEATRE SUPPLY

and

INTERNATIONAL PROJECTOR CORPORATION





Love's new sweet song

True love never did run smoothly—not in the continuity. But in filming it must... *if new-day budgets are to be met.* That is why so much attention is given to keying film and situation... to precision processing controls; why so much is done to ensure prints of optimum quality at minimum expenditure; why the Eastman Technical Service for Motion Picture Film works with the industry—cooperates alike with studio, laboratory, exchange, and theater operator.

Branches at strategic centers...
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East Coast Division
342 Madison Avenue
New York 17, N. Y.

Midwest Division
137 North Wabash Avenue
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EXTRA

Motion Picture News

EXTRA

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Burns 10 mm "Hitex" carbons at 135 amperes, or 11 mm regular carbons at 120 amperes. For the

FULL HOUR RUNNING PERIOD

of 5000-ft 3-d reels, the 10 mm "Hitex" can be burned at 120 amperes, or 11 mm regular carbons can be burned at 115 amperes. The color value and intensity of the light at the screen is maintained constant throughout a full trim

WITHOUT MANUAL ADJUSTMENT

by an automatic arc crater positioner. Positioned in the path of the light beam, National's new Reflect-O-Heat Unit permits a great increase in light at the screen

WITHOUT A CORRESPONDING INCREASE
IN HEAT AT THE APERTURE

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"THERE'S A BRANCH NEAR YOU"

See National Theatre Supply about this new lamp now!

IN THE SPOTLIGHT

At this year's end, the conductor of these columns extends Greetings and Best Wishes to the many friends throughout the Alliance who, by their graciousness and cooperation, have made our path during the past year so much easier.

- Our congratulations to the latest addition to the IA family — Local 850, St. John's, Newfoundland. The members of this new Local — motion picture studio production technicians — are employed by a Canadian government sponsored producer, Atlantic Films and Electronics, Ltd. This government sponsored outfit will produce documentary films.

- The Southern District Council No. 2, comprised of IATSE Locals, met on November 17 last at the Chapman Park Hotel in Los Angeles. The 60 delegates to the meeting and their wives were the guests of Los Angeles Local 150 at a banquet, which followed the close of the business sessions. Carl G. Cooper, IA 4th vice-president, and Zeal Fairbanks, IA representative, were among the top International officials present.

- Local 135, Sedalia, Mo., recently concluded negotiations with the Uptown Theatre in Sedalia calling for a 10% wage increase, two weeks vacation with pay, and time and one-half pay after 35 hours.

- Harry E. Storin, member of New York Local 306, was elected 1st deputy president of the Associated Masonic Clubs of the State of New York.

- The 25-30 Club will hold its annual installation, dinner and dance on

Thursday evening, January 14, next, at Zimmerman's Hungarian Restaurant in New York. A highlight of the evening will be the presentation of beautifully inscribed retirement cards to all members of the Club who have either retired from the craft or are on pension. A most enjoyable and memorable evening, full of surprises, is in store for the members and their guests, according to, a Club announcement.

- Al Kaye, member of Local 384, Hudson County, N. J., rounded out 30 years service with Warner Bros. by switching to Loew's Jersey City.

- Michael J. Nugent, recording and corresponding secretary of Local 650, Westchester County, N. Y., was re-elected for the third term as councilman for the city of Yonkers. He was

nominated by the Democratic party, endorsed by the Liberal Party, Westchester Federation of Labor, and the CIO of Westchester County. With such backing his re-election was a foregone conclusion.

Nugent's civic interests take in such activities as the National Advisory Committee of the Labor Participation



•
Michael J. Nugent, secretary, Local 650 Westchester Co., N. Y.
•

Department of the Community Chests and Councils of America, on which he serves as AF of L representative; he is 1st vice-president of the Yonkers Community Chest; trustee of the Westchester Federation of Labor; member of the LaRabida Council. Knights of Columbus, and of the Lions Club. In addition to all this he is employed as projectionist at the RKO Proctor's Theatre in Yonkers. A pretty busy schedule for any one man, we say.

- Daniel V. Flask succeeded Paul Mach as president of Local 171, Pittsburgh, Penna.

- The yearly financial statement sent to all members of Chicago Local 110 is a most interesting document in that it reports to each individual member the disposition of all monies received and disbursed by the Local. This report, drawn up by an independent firm of auditors, reveals, among other things, that as of August 31, 1953, Local 110 had on hand

Holiday Greetings and Best Wishes



To Our Many Friends Everywhere

United States Savings Bonds with a maturity value of \$520,000 (original cost is \$389,015.00). It also lists the total income from the various welfare funds and gives an itemized account of the many benefit disbursements made during the year — such as sick, vacation, old age retirement and death benefits. The grand total of cash and securities on hand as of August 31, 1953 is shown to be \$708,640.50 — which is not hay in any man's country.

Under the guidance of its business representative, Eugene Atkinson, and its secretary, Clarence Jalas, Chicago Local 110 has for a number of years enjoyed the reputation of being one of the best administered Locals in the Alliance. The report outlined above confirms it.

- The untimely death last month of Charles Kellner, chief projectionist at RCA's Johnny Victor Theatre in New York, was a shock to his many friends in the industry. He was ill but a short time and it was generally believed that he was well on the road to recovery. Early this year Kellner completed 25 years service with RCA and was scheduled to attend the dinner given by the company to all employees with the organization for 25 years, but illness prevented his attendance.

Kellner was well-known in projection circles throughout the country and the Johnny Victor Theatre was a "must" with many out-of-town IA

men, along with the Music Hall and the ace Broadway motion picture houses. His unfailing courtesy and friendliness to these visitors won him their respect and admiration.

- One of our subscribers, Harry Hollander, has informed us that he has available back issues of IP beginning with January 1944. Those interested in obtaining back numbers may contact Hollander at 21-36 Seventy-seventh St., Jackson Heights, L. I., N. Y.

- IP's "Monthly Chat" for October, in which we commented on the remarks made by a service company official who blasted the so-called inefficiency of projectionists in showing 3-D pictures, seems to have stirred up quite a bit of feeling in projectionist

circles, judging from the many letters we have received. Typical is the following letter from a supervisor of projection for a Mid-West chain of theatres whose identity, for obvious reasons, cannot be revealed:

"The October editorial in IP anent an unnamed representative for a service company who stated in an address at a convention of exhibitors in Boston several months ago that projectionists were to blame for customer deficits at the box-office because they are not super-wizards, was a pretty good spit ball. Did he praise Hollywood for its perfect (?) product that was being so messed up? I mean the Hollywood that informed us that each and every foot of 3-D film would be edgemarked.

"I should like to relate here a true incident where projectionists were put on the spot, so to speak — received no immediate help — and in spite of unforeseen complications, kept the show going. And for which they received no plaudits from the industry.

"The management of a certain motion picture theatre in my territory decided that it was not necessary to screen any of the new 3-D prints, accepting Hollywood's word that all new prints were in perfect sync. This theatre had already successfully shown a number of 3-D features and anticipated no trouble with the new ones.

"Before leaving the theatre one night after running a 2-D picture, the projectionists ran the test loops, checked the alignment and left everything in readiness for the next day's show — a 3-D film. The print arrived the next morning, as per schedule, but with the *editor's* strip on the beginning of one reel and no added footage on the other. This, however, was caught on the rewind and before the showing.

"The picture was flashed on the screen and the main title went through with a

Compliments of the Season

LOS ANGELES LOCAL NO. 150

I. A. T. S. E.

VETERAN MEMBERS OBSERVE 50TH ANNIVERSARY OF L. 105, LONDON, ONT., CANADA



Shown above is a group of old-time members of Local 105 present at the Local's recent 50th anniversary celebration. Seated, left to right: Joseph Maoriani, charter member holding a life membership card; Bill Newman, who joined the Local one month after it was formed in 1903 and who was presented with a life membership card at the banquet; H. McLean, member since 1917, and Fred Hewitt, who joined the Local in 1920. Standing, left to right: H. McAllister, member since 1917; J. Saunders, Sr., who joined the Local in 1913; Alex McLeish, member since 1917 and present secretary-treasurer of the Local, and S. Bradford, member since 1919.

strange depth perception. Then the fun began — the figures on the screen were about a foot apart all the time, sometimes in sync, and at other times ghostly. (Incidentally, this show was caught by the film critics of the local newspapers!) No, there were not 2 left or 2 right prints. The alignment was checked and found okay. Laying one film over the other showed a *large* displacement of images. The trick was to find a remedy for the trouble. Meanwhile there was nothing else to do but to run just one print as a 2-D presentation in order to keep the show going.

"A call was made to the local film exchange for a solution to this 3-D fiasco. The exchange manager expressed surprise because it was a NEW print — a PREVIEW release — a FIRST-RUN, etc. It MUST be the fault of the equipment, stated the exchange manager. Are you in sync, he questioned. Have you checked the edge numbers? Finally, the exchange agreed to ship a new print to the theatre.

The next morning the new print arrived and the previous day's experiences with the first print were repeated. Again the film had to be shown in 2-D. The following day the theatre received a frantic phone call from the exchange

asking the manager to look on the LAST page of a recently released press book (54 pages) on which he would find a note directed to projectionists. This note instructed projectionists *not to use loops, but to screen the picture and after the main title goes through, to wait until a scene comes on and then swing the projectors until you get 3-D, then, without glasses, keep them in frame.* Of course, it would have been much too simple to place these instructions inside the film can where the projectionist could see it when he removed the print.

Men Overburdened

"Now this theatre also runs a 2-D feature on the same bill with 3-D. Imagine the 2-D changeovers following this 3-D piperoo after such a projector alignment!!! The projectionists did the best they could in following the belated instructions but under the circumstances it was hardly what you would call a perfect 3-D presentation. But wait — on the last day a preview was added to the regular show. This was a 3-D preview and was produced by a company whose products rely upon perfect loop alignment. Imagine, if you can, all this in one evening — 2-D, 3-D piperoo, 2-D, 3-D preview, and a 3-D piperoo. Per-

haps this is the show that the Boston orator saw.

"I have often wondered what would happen to these critics if they had to walk in cold on a 2-man de luxe job with stereo sound, 2-D, 3-D, Cinema-Scope, etc., and hold up their end under present conditions. I would suggest that the unnamed orator with the high IQ step down from his throne and once again become one of the cheerful service men — the guy with the black bag and the long stride who, according to the folder, saves the 8 o'clock show on Saturday night with his meters. He might get a different slant on projection efficiency — or wouldn't that be good business?"

Holiday Greetings

from

LOCAL NO. 181

I. A. T. S. E.

Baltimore

Maryland



Holiday Greetings

and

Best Wishes for 1954 to All Our Friends



THE BODDE SCREEN COMPANY

8829 VENICE BOULEVARD

LOS ANGELES 34, CALIF.

RCA's "Magnetic Movies" Portend New In

Paper-thin half-inch magnetic tape carries sound and pictures in "electronic photography" process designed for television. Wide range of uses includes projection of motion pictures.

A NEW REVOLUTION in the motion picture industry, not next year nor the next but possibly within the next five years, was foreshadowed in Princeton, N. J., this month when the Radio Corporation of America unveiled "electronic photography."

The new system is simply the recording of sound and picture, the latter in either black-and-white or full color, on plastic tape coated with iron oxide. Its cost, exclusive of production, and labor, is a fraction of the cost of film. Theatre equipment is expensive.

The development is part of the \$40,000,000 RCA research project from which has come the compatible color television system now awaiting official sanction in Washington. Some \$25,000,000 has been expended to

date, with another \$15,000,000 available.

Essentially the system utilizes the electronic principles of the familiar tape sound recording. Picture recording is made possible by ultra high frequencies, video signals ranging up to 4,000,000 cycles per second as against the 20 to 20,000 cycles range for audio.

For theatre use, either theatre television or motion picture projection, equipment employed would be the same, with some modifications, as is now used for theatre Tv showings.

"Electronic photography," RCA engineers stressed, is still in the developmental stage and much research work remains to be done before the system is brought to perfection. Gen. David Sarnoff, chairman of the board of RCA, estimated the time needed at between one and two years before the

system is ready for commercial television broadcast, "approximately a year of this for "economic adjustment."

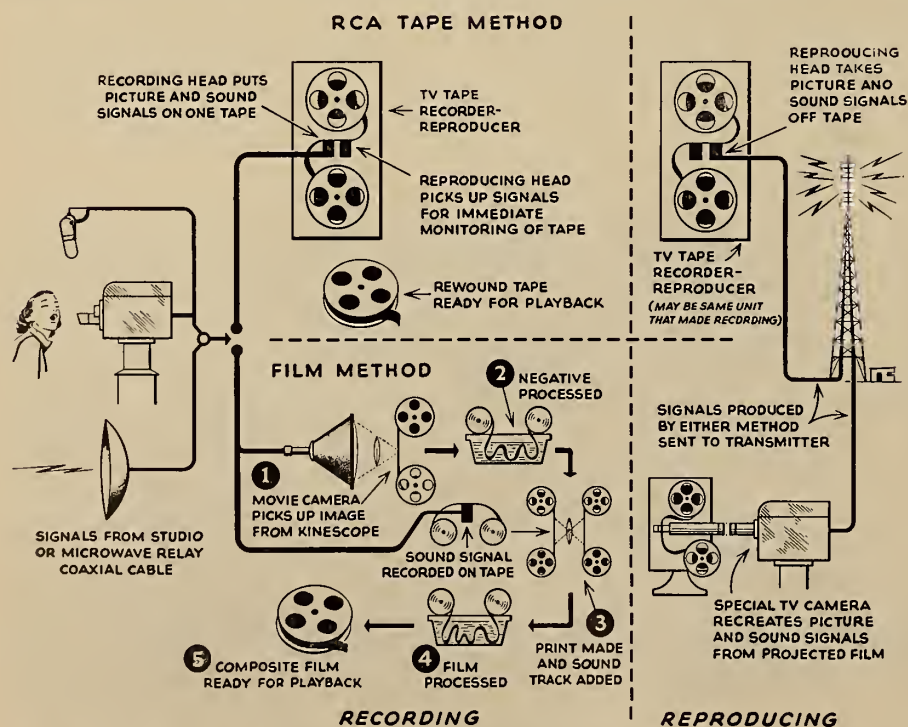
The compact equipment used in the Princeton demonstration was developed by a seven-man research team headed by Dr. Harry F. Olson and William D. Houghton. Others on the team are Maurice Artzt, J. T. Fischer, A. R. Morgan, J. G. Woodward and Joseph Zenel.

Five Years Away

RCA engineers declined to make any estimate of time before the system is ready for the theatres of the nation. However, engineers in the motion picture field were, for once, less conservative than were the industry's business leaders who saw RCA's dramatic demonstration in Princeton. The film engineers figured the time as five years, with ten years as the outside limit.

The demonstration was held at RCA's David Sarnoff Research Center at Princeton on Tuesday, December 1, with several hundred representatives of the press, including the country's top science writers, present. A second demonstration for motion picture executives and engineers was held in the afternoon. Evidence of the importance of the event is the attendance of a large contingent from Hollywood, including David O. Selznick, Nicholas M. Schenck, president of Loew's, Loren L. Ryder, Paramount's technical chief; W. F. Kelley, of the Motion Picture Research Council, and a dozen others. Ben Goetz, of Metro's staff in Britain, flew in for the show. Gen. E. P. (Ted) Curtis, Eastman Kodak, was in from Rochester. Others seeing the demonstration included Herbert Barnett, president of the SMPTE, Henry Kogel, SMPTE staff engineer, and Frank Cahill, of Warners.

While RCA's picture-on-magnetic tape system is the first to have practical proportions as demonstrated, at least two other companies are working on the same thing. Bing Crosby's



The diagram above shows steps in recording and reproducing a television program by the video tape method as contrasted to the typical film method used in today's telecasting. In theatre Tv, or in the projection of motion pictures from magnetic tape, additional steps would be required, including the inevitable rewind. Theatre equipment would be very much the same as is now used for theatre Tv.

ry Revolution

FREDERICK HODGSON

research group demonstrated a black-and-white version in Los Angeles last year. Eastman Kodak is also involved in the magnetic tape field. The tape used in the Princeton demonstrations was made by Minnesota Mining.

Small Screen Size

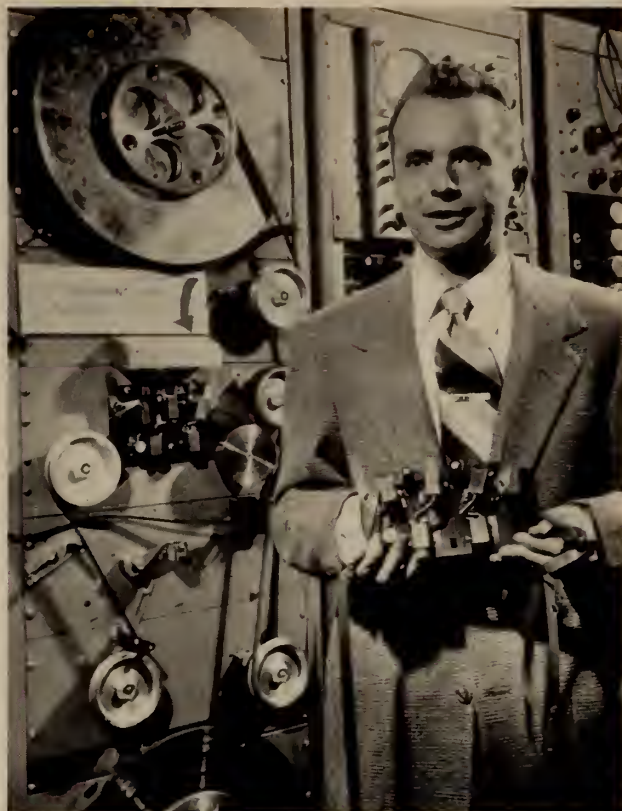
The demonstration opened with the showing of a black-and-white picture on two television receiving sets. This previously recorded broadcast originated in New York and was picked up in Princeton. Picture size in the demonstration room was 14 inches. Dr. E. W. Engstrom, RCA vice-president in charge of the laboratories division, said the size could be expanded easily to the 21-inch, or larger, of the living-room Tv set or to the full size of a theatre screen by means of theatre Tv equipment.

This writer watched the demonstration variously from a half dozen points in the room. Picture definition was very sharp. There was a slight red-dish glow at the top of the picture. This was evident on both receivers.

Following the black-and-white showing there was a playback of a previously recorded color picture. The latter was not as satisfactory as the black-and-white, the general effect being somewhat similar in color quality to the viewing of an old-time anaglyph 3-D picture. Color values were definitely bad, a fact fully realized by RCA. In commenting, Gen. Sarnoff again stressed the fact that the system was still being developed but that the basic problems had been licked. It remains now, he said, to bring it to perfection.

The third item was a playback of a black-and-white magnetic recording of a scene made in New York, carried to Princeton by microwave, picked up by an antennae on the roof of the laboratory and recorded. Fourth was a live color television program, also via microwave from New York 45 miles away. This was first shown live,

Research Engineer Joseph Zenel is shown holding a multiple-recording head, heart of the picture-an-tape system. The rack at the picture's left carries the magazines, head assembly (arrow) and pull-down mechanism. The rack immediately behind Mr. Zenel contains the recording amplifiers. The multiple recording head, RCA's jealously guarded secret, is designed to respond to the ultra-high frequencies, up to 4,000,000 cycles per second, needed for pictures. Magnetic soundheads used in motion pictures, including CinemaScope, are not required to respond beyond 20,000 cycles per sec.



then immediately played back with an absolutely imperceptible time lag, 180th of a second.

Featured in all showings was Margaret Hayes, motion picture and television actress. The production was under the direction of Herbert Swope, Jr., of NBC.

Projectionists Are Needed

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plastic tape. As the tape is drawn over the recording head, the head continuously changes the magnetic polarity of the magnetic oxide particles on the tape so that they become a compact code of the original signal.

For playback, the tape is drawn across the same, or a similar head. The magnetic "shorthand" on the tape causes an alternating current to flow in the windings around the reproducing head. The reproduced current closely duplicates the original signal.

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1—HIGH-FREQUENCY RECORDING HEADS. Research has resulted in specially developed recording and reproducing heads which respond to fre-



RCA's "Magnetic Movies" Portend New TV Revolution

Paper-thin half-inch magnetic tape carries sound and pictures in "electronic photography" process designed for television. Wide range of uses includes projection of motion pictures.

A NEW REVOLUTION in the motion picture industry, not next year nor the next but possibly within the next five years, was foreshadowed in Princeton, N. J., this month when the Radio Corporation of America unveiled "electronic photography."

The new system is simply the recording of sound and picture, the latter in either black-and-white or full color, on plastic tape coated with iron oxide. Its cost, exclusive of production, and labor, is a fraction of the cost of film. Theatre equipment is expensive.

The development is part of the \$10,000,000 RCA research project from which has come the compatible color television system now awaiting official sanction in Washington. Some \$25,000,000 has been expended to

date, with another \$15,000,000 available.

Essentially the system utilizes the electronic principles of the familiar tape sound recording. Picture recording is made possible by ultra high frequencies, video signals ranging up to 4,000,000 cycles per second as against the 20 to 20,000 cycles range for audio.

For theatre use, either theatre television or motion picture projection, equipment employed would be the same, with some modifications, as is now used for theatre TV showings.

"Electronic photography," RCA engineers stressed, is still in the developmental stage and much research work remains to be done before the system is brought to perfection. Gen. David Sarnoff, chairman of the board of RCA, estimated the time needed at between one and two years before the

system is ready for commercial television broadcast, "approximately a year of this for "economic adjustment."

The compact equipment used in the Princeton demonstration was developed by a seven-man research team headed by Dr. Harry F. Olson and William D. Houghton. Others on the team are Maurice Artzt, J. T. Fischer, A. R. Morgan, J. G. Woodward and Joseph Zenel.

Five Years Away

RCA engineers declined to make any estimate of time before the system is ready for the theatres of the nation. However, engineers in the motion picture field were, for once, less conservative than were the industry's business leaders who saw RCA's dramatic demonstration in Princeton. The film engineers figured the time as five years, with ten years as the outside limit.

The demonstration was held at RCA's David Sarnoff Research Center at Princeton on Tuesday, December 1, with several hundred representatives of the press, including the country's top science writers, present. A second demonstration for motion picture executives and engineers was held in the afternoon. Evidence of the importance of the event is the attendance of a large contingent from Hollywood, including David O. Selznick, Nicholas M. Schenck, president of Loew's, Loren L. Ryder, Paramount's technical chief; W. F. Kelley, of the Motion Picture Research Council, and a dozen others. Ben Goetz, of Metro's staff in Britain, flew in for the show. Gen. E. P. (Ted) Curtis, Eastman Kodak, was in from Rochester. Others seeing the demonstration included Herbert Barnett, president of the SMPTE, Henry Kogel, SMPTE staff engineer, and Frank Cahill, of Warners.

While RCA's picture-on-magnetic tape system is the first to have practical proportions as demonstrated, at least two other companies are working on the same thing. Bing Crosby's

FREDERICK HODGSON

research group demonstrated a black-and-white version in Los Angeles last year. Eastman Kodak is also involved in the magnetic tape field. The tape used in the Princeton demonstrations was made by Minnesota Mining.

Small Screen Size

The demonstration opened with the showing of a black-and-white picture on two television receiving sets. This previously recorded broadcast originated in New York and was picked up in Princeton. Picture size in the demonstration room was 14 inches. Dr. E. W. Engstrom, RCA vice-president in charge of the laboratories division, said the size could be expanded easily to the 21-inch, or larger, of the living-room TV set or to the full size of a theatre screen by means of theatre TV equipment.

This writer watched the demonstration variously from a half dozen points in the room. Picture definition was very sharp. There was a slight reddish glow at the top of the picture. This was evident on both receivers.

Following the black-and-white showing there was a playback of a previously recorded color picture. The latter was not as satisfactory as the black-and-white, the general effect being somewhat similar in color quality to the viewing of an old-time anaglyph 3-D picture. Color values were definitely bad, a fact fully realized by RCA. In commenting, Gen. Sarnoff again stressed the fact that the system was still being developed but that the basic problems had been licked. It remains now, he said, to bring it to perfection.

The third item was a playback of a black-and-white magnetic recording of a scene made in New York, carried to Princeton by microwave, picked up by an antennae on the roof of the laboratory and recorded. Fourth was a live color television program, also via microwave from New York 45 miles away. This was first shown live,

Research Engineer Joseph Zenel is shown holding a multiple-recording head, heart of the picture-on-tape system. The rock of the picture's left carries the magazines, head assembly (arrow) and pull-down mechanism. The rock immediately behind Mr. Zenel contains the recording amplifiers. The multiple recording head, RCA's jealously guarded secret, is designed to respond to the ultra-high frequencies, up to 4,000,000 cycles per second, needed for pictures. Magnetic soundheads used in motion pictures, including CinemaScope, are not required to respond beyond 20,000 cycles per sec.



then immediately played back with an absolutely imperceptible time lag, 130th of a second.

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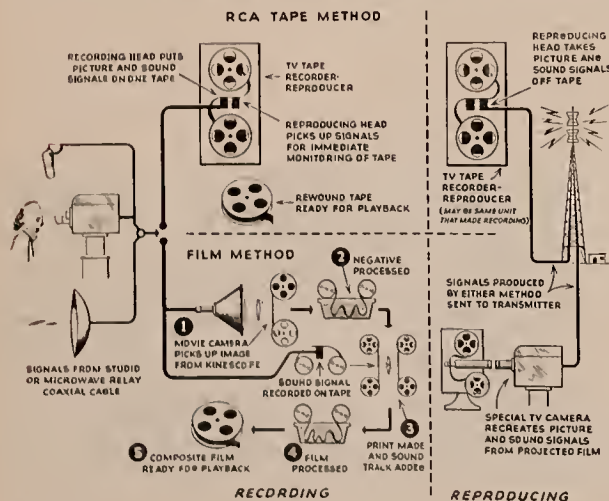
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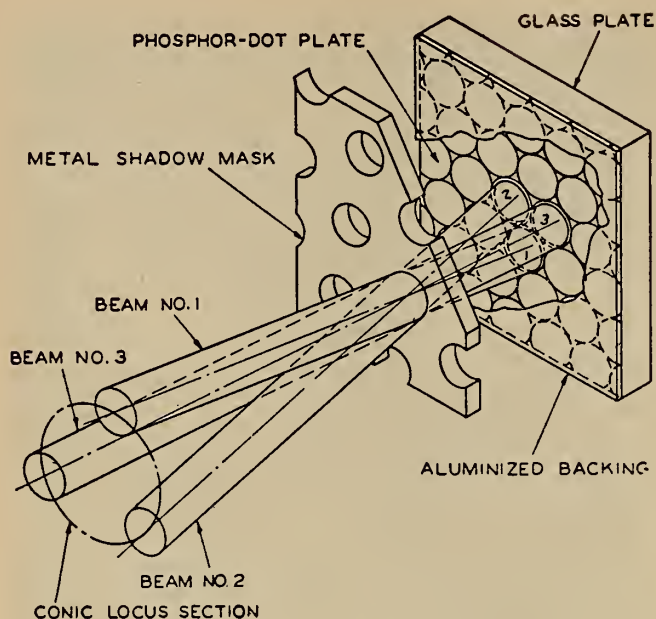
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The diagram above shows steps in recording and reproducing a television program by the video tape method as contrasted to the typical film method used in today's telecasting. In theatre TV, or in the projection of motion pictures from magnetic tape, additional steps would be required, including the inevitable rewind. Theatre equipment would be very much the same as is now used for theatre TV.



This diagram illustrates the principle of color television in the RCA system. Electron beams representing the three primary colors — red, blue, and green — are directed to particular phosphor dots each of which reproduces a separate color. The beams converge and pass through small holes in a metal shadow mask, and then diverge again for a short distance until reaching the proper phosphor dot. The portion of the tube represented is a small section of the shadow mask and the face of the tube.

quencies many times above the cut-off point for the recording heads now used in sound recording on magnetic tape. This means that the speed of the tape across the head has been brought to within manageable limits. The equipment used in the demonstration has a tape speed of 30 feet per second, or just above 20 miles an hour.

Reducing this to motion picture terms, the tape moves at 1,800 feet per minute, twenty times as fast as the 90-feet-per-minute of film. Film moves through the projector at a speed of 5.460 feet per hour, or slightly faster than one mile per hour. Tape moves at 108,000 feet per hour.

Advanced equipment, Dr. Engstrom said, is now under construction and this will move the tape at a much slower rate.

17-Inch Reels

2—SIZE OF MAGNETIC TAPE REELS. The magnetic tape reels of the laboratory equipment demonstrated in Princeton are 17-inches in diameter and record just four minutes of a television program. RCA engineers are working on a reel 19 inches in diameter designed to carry 15 minutes of program. Using a change-over system similar to that used for film in theatres, it will be possible, Dr. Engstrom said, to give a show of indefinite length.

3—ELECTRONIC AMPLIFYING AND EQUALIZING CIRCUITS. Recording and reproducing amplifiers have been designed to handle the signal inputs and the signal outputs. These take into ac-

count and compensate for the characteristics of the heads and the magnetic tape materials when recording the very wide bands of frequencies used in television. Research is now going forward to obtain better response characteristics than at present.

4—CONSTANT SPEED TAPE TRANSPORT MECHANISM. Since even small variations in the speed of the tape and in the pressure at which it bears on the head can create noticeable effects on the picture, it was necessary to devise precision apparatus to accurately control the speed of the tape at the recording and reproducing points. The laboratory video tape equipment controls these many times more accurately than is necessary in magnetic tape recorders for sound alone. Even greater precision in regulating speed and pressure appears possible through research now under way.

The equipment, examined by *International Projectionist*, uses a flywheel to maintain constant and even speed.

Five Channels Used

5—ASSIGNMENT OF TAPE CHANNELS. For video tape recording of color television with the RCA system, five parallel channels are recorded on the single magnetic tape one half inch in width and tissue paper-thin. There is one recorded channel for each of the primary color signals, red, green and blue; for the synchronizing signal and for the sound signal. For black-and-white recording a one-quarter inch tape would suffice.

In the demonstration seen by IP of color television recording on magnetic tape, the five recorded channels were obtained from the output of a single color Tv receiver. In reproducing from the recordings, the tape supplied the three primary color signals direct to the three electron guns of the RCA tri-color kinescope, the signals needed to synchronize the scanning, and the signal which carried the sound.

To rebroadcast a color television program it is necessary to combine the three primary color signals with the synchronizing signal to form a composite signal to send to the transmitter. While this operation is not yet ready for demonstration, Dr. Engstrom said that it is the subject of current development and that apparatus to produce this result is now being designed.

"While some technical problems still must be surmounted before video tape equipment can be made available commercially," Dr. Engstrom said, "RCA considers that the toughest of them have been conquered and that further development is certain to solve the remainder."

No Film Processing

Gen. Sarnoff described the achievement of the RCA engineers as "the first major step into an era of electronic photography in which motion pictures in color and black-and-white will be produced quickly and economically, without any photographic development or processing.

"Magnetic tape recording of television programs as shown today," Sarnoff said, "has great possibilities first for television broadcasting and, later, for national defense, for the motion picture and theatre industry, for industry in general, for education, and for home entertainment.

"While this electronic video tape equipment is still in the developmental stage, the basic principles and principal elements of our system have been tested and confirmed. We are confident that it is only a matter of time, perhaps two years, before the finishing touches will bring the system to commercial reality.

"It is essential for the future of the television art that video tape recording be introduced to give the television industry a practical, low-cost solution to program recording, immediate playback, and rapid distribution. Video tape will be important for black-and-

white broadcasting; it will be essential in the creation of a full color television service.

"According to our present estimates, the cost of recording a color television program on magnetic tape would be only five percent of what it would cost to put it on color film, since the tape can be reused."

Advantages Over Film

Gen. Sarnoff, declaring the development had far wider horizons than its immediate purpose in TV broadcasting, claimed advantages of magnetic tape over ordinary film.

"Magnetic tape requires no chemical processing," he said. "The pictures can be viewed the instant they are taken, which adds new flexibility in making motion pictures. An unlimited number of copies of magnetic tape recordings can be made quickly. Recorded tapes can be preserved indefinitely for historic reference, or, if desired, can be electronically 'wiped off' and reused again and again.

"With further development of video tape techniques, numerous possibilities will open up. Small portable television cameras are already in wide use in industry, in stores, in banks, in schools and colleges. Low-cost television cameras that work like satellites off home television receivers are ultimately possible. Eventually, low-cost video tape equipment of simpler and more compact design than the studio-type equipment shown today can be made available as attachments for these cameras.

"The all-electronic chain of portable television camera, video tape recorder and standard television receiver, would make a convenient and versatile system for making amateur as well as professional motion pictures. It will speed the preparation of newsreels and will be a useful tool for news reporters. The tape would not have to be sent away for processing with its attendant delays and extra costs. In the home, the tape equipment could be used for home movies or connected to the television set to make a personal recording of a favorite television program."

Much Time Saved

Outlining the need for tape recording techniques, Dr. Engstrom, explained the complications involved in conventional kinescope recording of television pictures.

"When a television program is recorded by kinescope recording methods," he said, "the pictures pass from the television camera through most of the television system to be reproduced on a small kinescope, or picture tube. A special motion picture camera then photographs the program on motion picture film. The film must be chemically processed and, usually, a print made before the pictures can be reproduced. The reproduction requires another installation in which a television camera tube picks up the scene from a motion picture projector for rebroadcast.

"The current kinescope recording process is a round-about and costly approach," Dr. Engstrom said. "It is time-consuming, with film processing time running to several hours in most cases. And the quality may be limited, since the pictures must encounter all the hazards, of both the television system and the photographic process.

"In going from the electrical signals of the camera to the signals for rebroadcast by a television transmitter, kinescope recording requires four separate intermediate pictures to be formed, two by television and two photographically. There is no fundamental need for these intermediate steps.

"Magnetic tape recording, in contrast, stores the electrical signals directly as they come from the television camera. No processing, electronic or photographic, is necessary before the tape is played back. A single compact piece of equipment, which handles both recording and reproduction, will do the job of two complex installations needed with photographic methods."

Savings with Tape

Comparative estimates of operating costs (which include payroll, cost of tape or film and amortization of equipment) are highly favorable to tape methods. Although magnetic tape today costs more per minute of program time than 35-mm color film, the fact that tape needs no processing before playback compensates for the expense of raw tape. Engineers pointed out that what makes the savings on tape so great is the fact that the program can be electronically "wiped off" and the tape reused; in most normal operations it would be reused many times.

Recording black - and - white pro-

grams on film is estimated to be at least five times as costly as it would be on 1/4-inch magnetic tape, assuming that the tape would be reused many times. In making copies for distribution to television stations, a half-hour program could be taped for less than \$15 per copy, provided the tape is reused many times. (These figures, of course, refer only to the cost of producing the recorded tape, and not to the cost of the program.)

Even greater economies are estimated for making the original tape recording of color television programs, which under normal operating circumstances could be handled for only five percent of the cost entailed in color film recording. In making copies on tape that is to be used over and over again, a tape recording of a half-hour color program would cost roughly \$20.

Equipment Is Costly

Equipment for the new process includes an extremely light television camera weighing but 27 pounds and using the new Vidicon tube. This tube weighs two ounces and is but a fraction the size of the iconoscope tube, although it is said by RCA to have triple the sensitivity. For details of the RCA color Tv system see the article "Color Tv and How it Works" by James Morris starting on page 14 of the September IP.

For theatre projection of motion pictures the magnetic tape would activate an electron "gun," firing streams of electrons to a sensitized plate within the projector. The resultant picture, as in theatre Tv, is then reflected to the screen.

While the tape cost, as explained at the demonstration by Gen. Sarnoff and by Dr. Engstrom, would be slight in contrast to the cost of either black-and-white or color film, the equipment cost to theatres would be high. Guesses run as high as \$15,000 per unit, based on the present cost of theatre television installations.

Season's Greetings

LOCAL NO. 488

Harrisburg

Penna.

What's Your Problem?

Projectionists whose problems appear below will each receive a \$3.00 check from IP. We'd like to know "what's YOUR problem?"

Q. I am using Baldor Rectolite 4-tube tungar rectifiers and I frequently have a tube refuse to deliver any current. All will be working well until I strike the arc for a new reel. Then one of the tubes will not deliver. The filament will be in perfect condition and will burn normally but nothing will come from the plate. The tube may be only a couple of weeks old. The only remedy I can find is to replace it with a new tube. Then all is well again. I have tried the faulty tubes in other sockets and even in the other rectifier, but still they refuse to work. I would like to know if there is any way of bringing these tubes back to life? J. G. Jackson, Capitol Theatre, Port Alberni, B.C., Canada.

A. When an electrical engineer familiar with Baldor equipment was consulted on this question, he was unable to give a definite answer because the description of the rectifier's behavior was not detailed enough. However, he did make a suggestion. One important step in locating the trouble would be to check the plate and filament voltage of each tube in the rectifier, also checking voltages in the other rectifier for purposes

of comparison. The check should start on the day that one of these short-life tubes is installed and be continued until the tube stops functioning. If the tube with the short life is receiving an improper current load, this would show up in the check. There is no way of bringing a dead tube back to life.

The engineer also commented on an experience he had some years ago which might have some bearing on your case. He traced some rectifier trouble to a rare situation where a batch of slightly defective rectifier tubes had been received by a theatre. The fundamental design of the tube is simple, he said, but performance depends on the atmosphere in the tube as well as on the filament. If there is a slight leak, permitting oxygen to enter, this would not necessarily be immediately apparent, but close observation should show traces of a milky-white powder deposit on the inside of the glass or on the filament supporting structure of the tube.

* * *

Q. This may be a very simple question but so far I've been unable to find any satisfactory answer. While show-

ing 3-D at a drive-in theatre here, we ran across a bad print that had several feet of black film spliced in to make up lost footage. When this reel was run a second time (on the right-hand machine) we covered left eyes but still could see very plainly the picture coming from the left machine with our right eye when the black frame leader ran through the right machine. I was under the impression that the left-eye picture cannot be seen by the right eye and vice versa. Would this situation be the fault of improper polarizing filters, either in the projection room or on the viewers? Wayne G. Smith, Local 446, Hamlet Road, Seaside, Ore.

A. Your impression is absolutely correct. In a properly projected 3-D picture, the left-eye image should be seen only with the left eye and the right-eye image only with the right. As you suggest yourself, the trouble could easily lie with the polarizing filters. They might have been damaged by heat if they were ever exposed to the full beam of the projector without shutter or film in the gate. This would be particularly true in the case of powerful drive-in lamps. Also, if your screen did not have the surface required to retain polarization, or was quickly and improperly painted, it could destroy the polarizing work of your projection filters. In addition, your filters should have been level and perpendicular to the projection beam.

There is one other possibility which hardly seems likely since you certainly would have noticed it. If your polarizing filters had been accidentally switched in the projector during the rush of setting up a 3-D show so that the left was in front of the right print and vice versa, you would have seen the left eye image with your right eye. You would have noticed this, however, because such a situation creates a most uncomfortable reverse effect in the stereo picture which would be obvious to you and all others watching the screen.



Season's Greetings

NATIONAL CARBON COMPANY

A Division of Union Carbide and Carbon Corporation

NEW YORK



Greetings from

The New York State Association
of

Motion Picture Projectionists

"An Educational & Technical Society"

New Products for the Industry

16-MM PROJECTION TABLE. A compact and adaptable projection table for 16-mm projection is offered by the Smith System Heating Co., Minneapolis. The table, which measures 17 by 29 by 42 inches, is all-metal in construction and has 3-inch swivel castors, two of them with brakes.

PERMANENT 3-D VIEWERS. The Texas State Optical Co., a large retail chain, is marketing low-cost permanent 3-D viewers. The "glasses" are sold in two styles, regular and also clip-ons for those who already wear glasses. Prices are reported to be high under \$2.

INVISIBLE SEAM VINYL SCREEN. A screen of vinyl plastic with "invisible" seams is offered by J. E. Robin, Inc., East Orange, N. J. A plastic welding process, developed by Max Schumann, German screen specialist, is said to make seams invisible even under bright light. Another feature claimed is a "no-sag" suspension system which is said to eliminate buckling and sagging.

FIBERGLASS DRIVE-IN SCREEN. An "all-purpose" screen for drive-in theatres, constructed of fiberglass and said to be suitable for both 2-D and 3-D projection, is marketed by the Natco Wonder Screen Co., Dallas. Sheets of fiberglass 8 by 10 feet in size and 1/8th of an inch thick are applied to a metal frame. While fiberglass has great tensile strength, it is flexible enough to permit curving, according to the company an-

nouncement. The screen can be used for both 2-D and 3-D when coated with special paint.

3-D SCREEN FROM RCA. A seamless vinyl screen designed for 3-D and wide-screen presentations is manufactured by RCA. The screen is recommended for 2-D and wide-screen presentations in houses using Suprex or high-intensity carbon arc light sources. It is said to be fungus-proof and unaffected by moisture. RCA's present Seamless Silver screen is designed for low-intensity carbon arc lamps.

NEW LORRAINE CARBONS. Two new carbons, designed to provide more light and longer burning for use with 3-D and

wide-screen processes, are marketed by Lorraine Carbons, Inc., Boonton, N. J. One is the new Orlux, 140 ampere, 10-mm special grade carbon and the 11-mm 20-inch, 120 ampere type. Also available from Lorraine are 13.6-mm high-intensity carbons for condenser-type lamps, as well as a full line of smaller carbons which are claimed to be capable of burning for the full running time of a 5000-foot reel.

Best Wishes

PROJECTIONIST

LOCAL NO. 486

I. A. T. S. E.

Hartford

Connecticut

Greetings and Best Wishes

PROJECTIONISTS LOCAL NO. 407

I. A. T. S. E. & M. P. M. O.

SAN ANTONIO

TEXAS

Greetings to the Craft

CENTURY PROJECTOR CORPORATION

LARRY DAVEE, Sales Manager

NEW YORK, N. Y.

Season's Greetings

from the

OFFICERS and MEMBERS

of

LOCAL NO. 257

Ottawa, Ont., Canada



Season's Greetings

CLAYTON PRODUCTS CO.



Greetings and Best Wishes

PROJECTIONISTS LOCAL NO. 160

Cleveland

Ohio



Single Strip 3-D To Get Circuit Tests

THREE major circuits have signed to give the Moropticon single film 3-D system a whirl. This is announced by Matthew Fox, chairman of the Polalite company, who adds that plenty of picture product will be available.

The trio of exhibitor groups is headed by 50 theatres of the Stanley-Warner chain. Bob O'Donnell's Interstate Circuit in Texas and the Malco Theatres in Tennessee are the others. First film for release will be Universal-International's color picture "Taza, Son of Cochise," due in early February.

IP attended the November 20 Moropticon demonstration in New York's big Capitol Theatre and checked the pro-

jection room both before and after the show. We were impressed by the possibilities but not by the demonstration. With Richard Morros and Herbert Strasser in charge, other demonstrations for exhibitors and the press are being held throughout the country.

Moropticon is a "beam splitter" system (described in detail by Robert Mitchell in the October issue of IP) using prisms and mirrors to carry the two images from the single film strip to the screen. To compensate for the inevitable loss of light in the Moropticon optics extremely light density prints are used. The system, of course, requires polarized filters and viewers.

In the demonstration seen by IP the print density had been cut to the point where the film was almost transparent. The resultant loss in picture quality followed naturally. The color was washed out very thoroughly. Amperage was 170 at the arc, both for the single strip demonstration and for the immediately previous "control" showing of the same scenes in conventional 3-D using two projectors. Scenes were from "Taza, Son of Cochise."

In saying that we were "impressed by the possibilities but not by the demonstration." IP is deliberately making allowances for the fact that print density was far too light. By the time Moropticon prints reach the theatres this difficulty should have been corrected.

The Moropticon unit is extremely compact, the complete equipment being easily packed in a small carrying case. Assembly, in front of the projection lens, takes less than 30 minutes.



Season's Greetings

to the thousands of craftsmen whom
we have been privileged to serve
with fine cinematic equipment.



C.S. ASHCRAFT MFG. CO., INC.

36-32 THIRTY-EIGHTH ST.

LONG ISLAND CITY 1, N. Y.

Arc Lamp Specialists for More Than a Quarter Century



Fraternal Greetings

TREASURERS AND TICKET SELLERS

LOCAL UNION NO. 751

I. A. T. S. E.

NEW YORK, N. Y.



Richard Morros (right), who is in charge of Moropticon demonstrations, shows Frederick Hodgson, editor of IP, just how compact is the prism system used in this 3-D process.

Season's Greetings

LOCAL NO. 224

I. A. T. S. E.

Washington

D.C.

Holiday Greetings

LOCAL NO. 376

I. A. T. S. E.

Syracuse, N. Y.

An Improved Carbon Lamp

For 3-D and Wide Screen†

by DR. EDGAR GREENER

Three dimensional and wide-screen projection require substantially more than the conventional amount of screen light. The Super Vent-arc has been designed to meet these requirements.

RECOMMENDED operation time for 3-D projection is 60 minutes continuous burning of the arc. Mirror arcs of normal design can take positive carbons up to only 20 inches in length. The positive support or carbon-guiding mechanism requires a carbon stub of about 2 inches and so reduces the useful carbon length to 18 inches. As the consumption rate shows some variations, a safety margin of 10% should be provided. This means a further reduction of the useful carbon length to about 16 inches.

Limited by this consumption rate, the most screen lumens a present-day reflector-type arc can produce with 80% screen distribution is 20,000, with an arc current of 115 amperes and no film or shutter.

Up to the maximum limit for smooth operation, the screen light a high-intensity arc can produce increases with the increasing consumption rate of the positive carbon, since the vapors produced by the evaporation of the carbon core constitute the light source. It thus becomes necessary for maximum light that any limitation on carbon consumption rate be removed. Such limitations can be overcome by an arc which is capable of continuous burning. In order to do this it becomes necessary to attach a new carbon to the burning one as soon as the latter is consumed to a minimum length determined by the carbon support.

Carbon Joining Process

This problem of joining positives proved to be a very difficult one for a cinema arc, since no failure of the joining process can be tolerated with a continuous show. Furthermore, the quality of the joint has to be such that no flicker or color change of the projection light appears on the screen when the joint burns through the arc.

The process of joining positive carbons has been worked out by our firm in the past two years, with the kind assistance of the National Carbon Co. The results are now so satisfactory that this method is ready for practical use.

The non-rotating positive carbon of the Super Ventarc Lamp makes the joining problem much easier. From a practical point of view, the dimensional tolerances normally associated with large-scale production processes must be taken into consideration, so that a joining method requiring a very high precision of the parts to be joined would be of little practical interest. The positive carbons for continuous operation are designed as shown in Fig. 1a, so that the core protrudes at one end, with a complementary hole formed at the other.

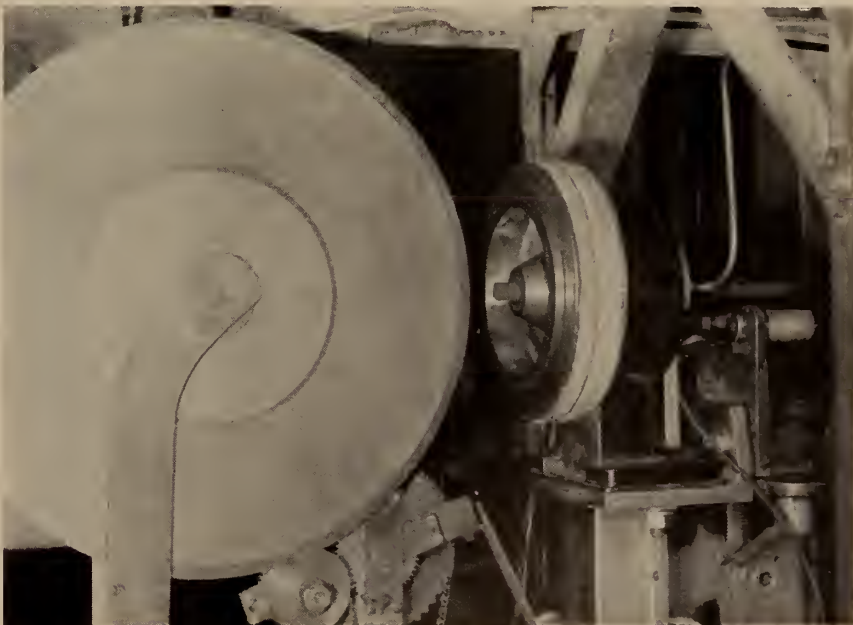
A magazine holding positive carbons is provided in the lamphouse. As soon as the length of the burning carbon reaches a certain value, a contact is operated which causes a new

carbon to leave the magazine and be joined to the burning carbon, the hollow end of the new carbon sliding over the protruding core on the cold end of the burning one (Fig. 1b). The parts to be joined are impregnated by the manufacturer with a special cement. As the joint moves toward the positive head, it is heated by a simple electrical oven, which hardens the cement. The magazine can be designed to take any quantity of positive carbons, and it can be refilled while the arc is burning.

The Disc Negative

With the continuous feed for the positive carbons, an adequate system must also be provided for the negative electrode. To obtain maximum brilliance from the arc, the current density in front of the positive crater must be increased to the maximum extent possible, thus causing a high evaporation rate of the positive carbon. With a rod negative and an arc length of reasonable value, this would give rise to "mushroom" deposits on the tip of the negative, resulting in erratic burning.

These difficulties are overcome by the use of a disc negative, mounted in a meridional plane of the illumination system. During operation of the arc, this negative disc is slowly rotated. All evaporation products con-



Above is the negative electrode assembly of the Super Ventarc. Note that the negative is a graphite disc, maintained in constant relation to the positive carbon by a separate motor. For even burning the disc is slowly rotated. The positive carbon is seen at the right, surrounded by a magnetic coil. Purpose of the latter is to "homogenize" the arc.

† Cond. from Jour. SMPTE, October, 1953. The full title of the original article is "An Improved Carbon-Arc Light Source for Three-Dimensional and Wide-Screen Projection."

densing at the edge of the disc are thus transported outside the arc stream and oxidized in the open air. The disc consumes slowly at a rate dependent upon the arc current and other factors, and has a useful life of the order of five to ten hours burning time.

The blown arc equipped with the continuous feed mechanism for the positives and combined with a suitably designed disc negative thus constitutes a source which can meet any requirement for cinema projection, within the limits imposed by the sensitivity of the film to the heat generated.

The Light Source

If the rate of evaporation of the core is high enough, the concentrated arc stream in front of the positive crater shows the same brightness as the crater itself. The absorption in the arc rises with increasing evaporation of the positive core until the crater edge is no longer visible through the arc. Under these conditions the arc stream replaces the positive crater as the light source. The brilliancy of this arc stream decreases with increasing distance from the crater.

To get a cylindrical source of constant brilliancy along its axis, an auxiliary mirror is provided near the arc, as shown in Fig. 2. This auxiliary mirror picks up the back radiation of the arc stream and forms an inverse image of the arc in itself. Seen from the direction of the main mirror the arc stream seems to operate between two positive carbons (Fig. 2).

This light cylinder produces many more lumens than the crater itself, and in addition it offers much better conditions for the illumination system. Referring to Fig. 3a, a flat source produces a very sharp peak in the center of the film aperture if the collecting angle α of the mirror is increased to 90 degrees in order to collect all the radiation of the flat source. This is due to the fact that the mirror-surface elements near the edge of the mirror see the source as a very narrow ellipse, with the small axis degenerating to zero for a 90-degree viewing angle. Because of this bad effect, the collecting angle of the mirror is normally limited to 70-75 degrees.

In contrast with this, the cylindrical light source offers its very best qualities from a viewing angle of 90 degrees to the carbon axis. This is il-



FIG. 1a. Positive carbons

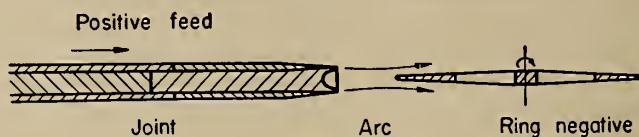


FIGURE 1b

lustrated in Fig. 3b. The illumination system of the Super Ventarc has therefore been designed to embrace the total solid angle around the source, the auxiliary mirror and the main mirror having each a collecting angle of about 90 degrees.

The combination of the two mirrors not only picks up the total radiation from the cylindrical source, thus giving maximum efficiency for the illumination of the film aperture, but also prevents the lamp house from being heated by waste light from the arc.

Maximum Screen Light

The maximum possible light flux for a projection system is limited by the tolerable density of radiant energy in the film aperture.

Light losses at the heat filter can

be compensated by a slight increase of the arc current, and any transmission of invisible radiation can be suppressed by additional filter layers. Consequently 50,000 lumens will be available in the future if the cutoff* at both ends of the visible spectrum can be made sharp enough and if projection-lens efficiency is 90%. This ultimate screen-lumen figure will grow proportionally if the heat tolerance of the film can be increased by forced-air cooling or the use of improved film material.

It must be pointed out that infrared transmitting mirrors are not suitable for very high-current arcs, as the support glass will be spoiled in a short time by deposits from the arc. The Super Ventarc uses a metallic mirror

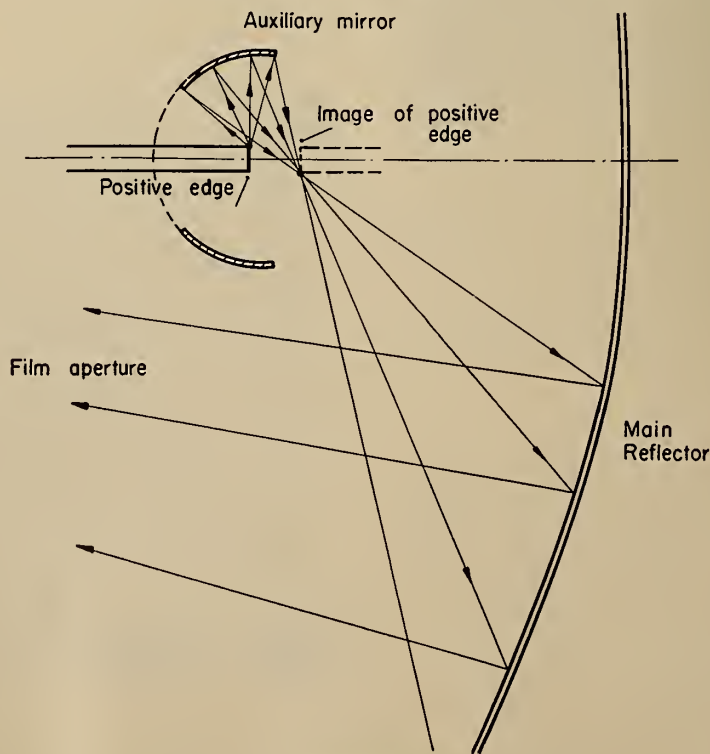
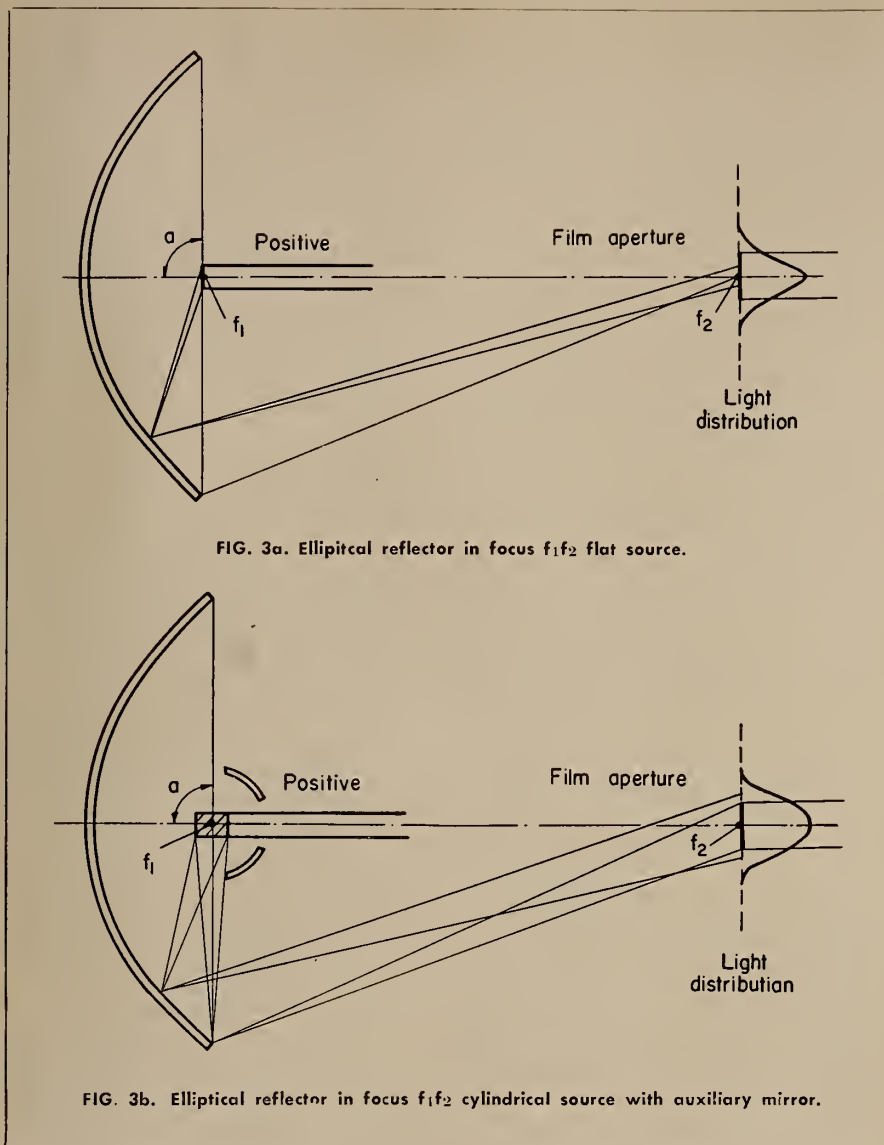


FIG. 2. Illumination system



evaporated with aluminum and with a protective layer of silicon monoxide. This protecting layer is so thin that its heat resistance is quite negligible. If hot particles fall on the surface of this mirror, the high heat conductivity of the metal prevents local melting, so that the particles do not fuse with the mirror surface but fall harmlessly to the bottom of the lamphouse. Comparative tests with a very heavily loaded positive crater showed the striking superiority of the metallic mirror with regard to these sputtering effects.

Color Projection

Three-dimensional and wide-screen projection must be combined with color. Since the picture is so much more realistic, the very best color has to be provided, and any color errors are much more noticeable than with a normal two-dimensional picture.

With subtractive color, the color

quality is directly related to the transparency of the film, in such a way that really good color is only available with prints of high density. This is true as long as such dyestuffs as change saturation and hue with varying density are used for subtractive color.

Since color for 3-D and wide-screen projection has to be of the highest quality, it would not be practical to try to obtain more screen light for

these processes by making color prints of higher transparency than that usual today for normal two-dimensional pictures.

Progress Since 1950

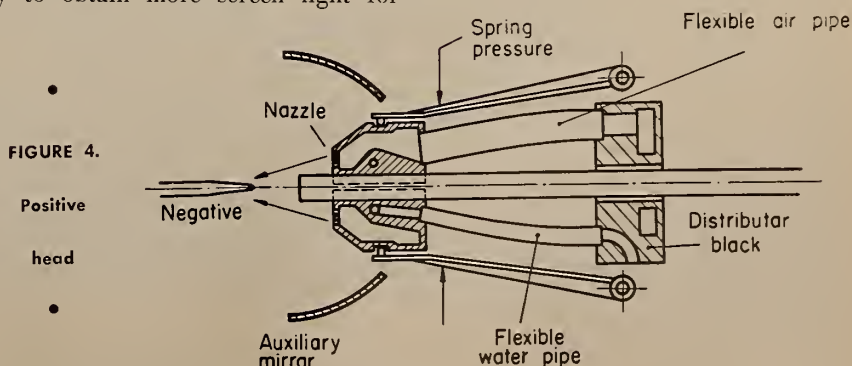
In an earlier article the author described a Ventarc giving a maximum output of 30,000 screen lumens with 100 amperes. The Super Ventarc presently described shows substantial progress in comparison with the technique used in 1950. The main improvements may be summarized as follows:

1. The Super Ventarc is provided with a magazine feed for the positives for continuous burning of the arc. Relatively short carbons can be used with this operation, thus giving better basic conditions for the optical illumination system. The 45-degree deflection mirror used with a vertical carbon in the earlier lamp can thus be avoided, and the positive is now arranged in the conventional horizontal position.

2. The design of the positive head has been improved by separating the carbon guide from the contact pieces, so that the centering of the positive is no longer affected by any wear of the contact pieces. These contacts are shaped as half cylinders, are directly water cooled, and each incorporates an air nozzle. Water, arc current, and compressed air are fed to the two contacts through flexible connections from a central distributor block. The carbon guide pieces are assembled with this block to form a stable unit. The contact pieces are pressed against the positive by a spring system which allows the contacts to adhere perfectly to the surface of the positive, without influencing the correct centering of the carbon (Fig. 4).

3. The big negative ring used in 1950 which surrounded the positive

(Continued on page 36)



RECENT PROJECTION ADVANCES IN EUROPE

(Continued from page 8)

them easier to operate and to keep clean.

Projectionists accustomed to open mechanisms develop a strong dislike of mechanisms "enclosed in little boxes" that hinder accessibility. This aversion is doubly intense in the case of an enclosed picture-head mounted upon an enclosed sound-head — two doors to open and close every time film is threaded into the machine! The mechanism-enclosure originated, of course, as an intended safety measure, but there is little definite evidence to support the contention that enclosed mechanisms are safer than open ones.

Mechanism Is Quiet

Those who aver that open mechanisms are noisier than enclosed ones may safely disabuse themselves of the notion. There is but little difference between the two types of mechanism on this score when the machines are in good condition, although the enclosed-type mechanism is excessively noisy when run with the door open because the enclosure greatly magnifies the noise of the rapidly fluttering loops and the clattering sound generated by the intermittent-sprocket teeth disengaging from the film perforations.

The open-type mechanism is remarkably quiet so long as the sprocket teeth are in good condition. The German projectors have gained an enviable reputation for smooth, silent operation, their extreme quietness being due to the absence of gear noises and a film path which minimizes the sound of the vibrating loops.

The unit construction of the Ernemann as a combination picture-sound machine is entirely logical. To manufacture a "silent" picture-head and mount it upon a separate sound-head seems to European projectionists a cumbersome makeshift that should have been discarded when sound-on-film became the standard medium nearly a quarter century ago.

Certain American projector manufacturers share this opinion, but feel that exhibitors prefer to buy picture and sound mechanisms separately and be able at any time to replace one or the other without having to replace both. The European exhibitor can nevertheless indulge the same whim, inasmuch as the mechanism of the

Ernemann can be purchased without the sound reproducer, and the sound reproducer can be easily removed from the picture machine for replacement.

May Be Adapted

It is interesting to note that in many European machines, such as the Ernemann IX and X models there is ample provision for subsequently mounting any additional equipment which may be needed to convert the projector to handle the most modern processes. These machines will thus be able to utilize such recent developments in projection as 1-strip 3-D and wide-film panorama, as well as new sound techniques like push-pull optical tracks, magnetic tracks on the picture film or on a separate film, and all types of stereophonic sound. Adaptations to 2-strip 3-D and to Cinema-scope offer no difficulties.

The driving motor of the new Ernemann models is located at the top of the projector behind the upper magazine. A heavy, vibration-free vertical shaft passes into the oiltight gear housing in which is located one of the simplest and sturdiest precision mechanisms ever devised for a motion-picture machine. The ruggedness of the gears and bearing brings to mind such top-quality American mechanisms as the Motiograph and Brenkert.

To accommodate the American 2-

strip 3-D system, the shaft of the regular driving motor (*Antriebsmotor*) is extended upward, and a compact synchronizing motor (*Gleichhaltmotor*) mounted behind the upper magazine directly in line with, and above, the driving motor. No gears, chains, or sprockets are used. To be used with this setup is the "Kommando" switchbox, a neat little control cabinet which permits the machines to be operated either singly or together in synchronism at the mere flick of a switch.

Self-Lubricated

Virtually wear-proof and silent in operation, the Ernemann mechanism is automatically lubricated by a self-pumping oil-distributing system which keeps the oil free from even the smallest particles by means of a mechanical and a magnetic filter.

The back of the mechanism is covered by a smooth plate having no irregularities or protuberances to spoil the clean design of the machine or to provide lodging places for dust. There are no exposed pulleys, takeup belts, or wheels. The cover plate in the Model X contains a "Plexiglas" window at the level of the intermittent movement so that the inside of the mechanism can be inspected.

The weight of the mechanism is supported by a pedestal directly underneath, resulting in the most rigid support. This method is at variance

Season's Greetings



PROJECTIONISTS LOCAL NO. 173
I. A. T. S. E.



Toronto, Ont.

Canada

with the older practice of having the lamp directly supported by the pedestal-base. It may be observed here that German projectors are somewhat taller than the American, the height of the Ernemann X being about 6½ feet from the bottom of the pedestal to the top of the upper spoolbox, while the Euro and Bauer projectors range from 7 to nearly 8 feet high, depending on the blocking of the pedestal and the diameter of the spoolboxes. (5000- and 6000-foot reels have long been favored in northern European countries.) The projectionist's work is facilitated when the film gate and lamp are nearly on a level with the eye.

Design Is Simple

A glance at the operating side of the Ernemann (Fig. 2) reveals the extreme simplicity of the projector and the ease with which it may be threaded with film.

The feed and holdback sprockets, it will be seen, are of the 32-tooth size. There is thus less chance for the perforations of the film to get torn than when small sprockets are used. This is particularly true in the case when the larger film-reels are employed. The intermittent sprocket, however, is a 16-tooth sprocket 24 mm. (0.945 in.) in diameter, a size introduced by the Germans in the late 1920's to replace the old 23.75-mm. (0.935-inch) intermittent sprocket.

The Ernemann intermittent unit is a standard 3:1 maltese-cross movement having a somewhat larger star and cam than are found in most American projectors. Also, the pin of the cam is a roller-pin which reduces wear of the parts to the vanishing point. Like the American Brenkert, the Ernemann employs a single long bearing for the star-wheel shaft, thus making removal and replacement of the sprocket a simple operation.

Considering the inventiveness of German projector designers, we were inclined to expect the more rapid 5:1 intermittents in the post-war German models. The 5:1 intermittent permits the use of shutters having 3 cutoffs per frame (with no loss of light or sign of travel-ghost) for flickerless pictures, or the regular 2 cutoffs, with narrow shutter blades, for greatly increased light transmission.

An American manufacturer, Nicholas Power, was the first to employ a successful intermittent having

a more rapid pulldown ratio than the conventional 3:1. Many projectionists still regard the Powers pin-cross intermittent as one of the best ever devised.

At the present time the maker of one of the better American projectors has plans on the drafting-board for an improved 5:1 movement which he intends to incorporate into a forthcoming mechanism — a projector that may easily render obsolete the most modern theatre machines now in use.

The aperture plates of the Ernemann Models IX and X have polished steel film runners and are readily removable for cleaning and for interchanging with the alternative plate carrying velvet-faced runners. The velvet runners are used when projecting new prints to prevent the accumulation of emulsion deposits which cause the film to "stick" and chatter, resulting in film damage and a jumpy picture on the screen.

Removing the upper base-plate detaches the shutter housing, film gate, gate door, and lens assembly as a single unit.

The gate door is built into the lens holder, the whole assembly sliding forward to allow plenty of room for threading. And as the gate of the Ernemann X opens, a "loop-former" automatically springs up into place, falling back when the gate is closed. The upper film-loop is thus ready-formed and always of the correct size. The Model IX does not have the loop-former.

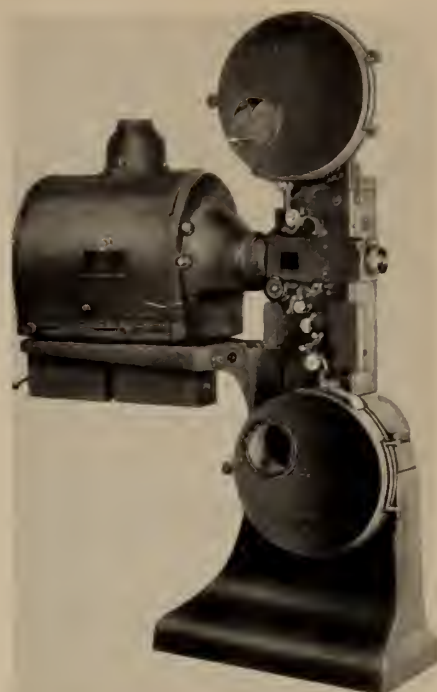
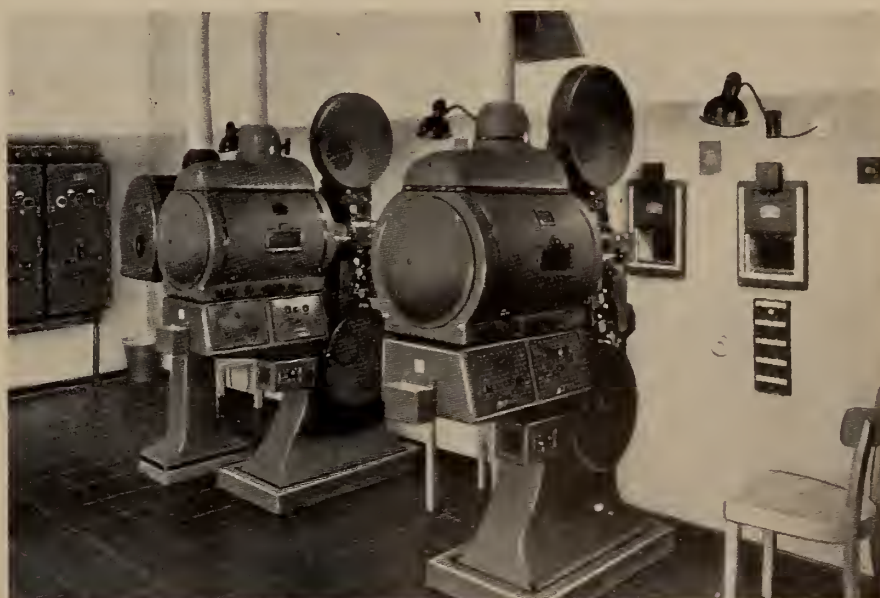


FIG. 2. Operating side of the Ernemann picture and sound mechanism. Having only three sprockets and a roomy film gate, the Ernemann can be threaded in a few seconds. The cover has been removed from the photocell preamplifier to reveal the components.

A pilot lamp in the shutter housing not only illuminates the aperture for threading, but also, in the Model X, throws an image of the frame-line upon a small circular ground-glass screen in the lens housing. Framing during projection is also extremely accurate in the Model X because the frame-line is imaged on the circular screen by the pilot lamp even while the film is running.

The lateral guide rollers are fixed



Projection room of the Metro Theatre in Kiel, Germany. The equipment includes two Ernemann X sound projectors with Magnosol IV lamps, a Zeiss Ikon Double-Dio arc projector for lantern slides, two Dominor M amplifiers, and Ikovox D speaker equipment.

to the top of the gate door instead of to the top of the aperture-plate assembly, as in American projectors, but the intermittent-sprocket shoe is carried by the bottom of the gate door in the usual manner.

The cylindrical shutter of the Ernemann functions, like the similar shutter of the Motiograph, as an extremely compact and efficient *double shutter*, cutting into the light-beam from the top and bottom simultaneously. There is, however, an interesting difference between the Ernemann and Motiograph drum-type shutters.

The Ernemann shutter contains two hinged, spring-tensioned metal "fire flaps" which open to let light through to the aperture only when the machine has nearly attained full running speed. Requiring no extra gearing in the mechanism, no centrifugal governors, friction discs, or other intricate paraphernalia to get out of order, the drum-shutter fire flaps (also used in the Bauer and Euro projectors) constitute the simplest and most positive-acting fire shutter conceivable.

Safety Devices

The fire shutter is but one of several safety devices in the Ernemann. The spoolbox film valves are arranged horizontally to prevent passage of flame to the reels. The "Protektor" upper loop-trip is connected to a separate fire drop which cuts off the light should the film break between the

intermittent sprocket and the upper feed sprocket. The Simplex SP has had this device for many years, and the Simplex E-7 and X-L utilize a similar safety trip, but in the Ernemann this device also disconnects the power supply to the motor and exciting lamp.

In addition to the loop-trip, the Ernemann models also have an ignition switch at the top of the mechanism. In case of fire, this automatically stops the projector and releases the Zeiss Ikon magnetic port shutters. And a master-control safety switch is built into the lamp table. This, when pressed by the operator, disconnects the lamps and motors of both projectors simultaneously, drops all shutters, and switches on the emergency lighting.

Water-cooled Gate

The film-cooling provisions of the Ernemann not only contribute to the safety of the machine, but also improve the quality of the projection, add to the life of the film, and make operating a more pleasant occupation. Like its predecessors, the Models V and VII-B, the X is worthy of the name "cold projector."

Cold tap water is circulated continuously through the hollow gate casting, keeping the film track very cool even when the hottest arcs are used. The film is thus spared the effects of heat which in most other pro-

jectors is transferred by conduction from the heated metal parts of the gate.

The water tubes are concealed in the interior of the pedestal and mechanism. The inlet tube is connected through a valve to any pipe carrying fresh water, and the outlet tube to the drain.

Inside the mechanism case is a small separately energized blower which directs cool air, via jets, upon both sides of the film in the gate. This expedient combats heating of the film by direct irradiation, for whatever heat would otherwise be absorbed by the film is largely removed by the currents of air.

The blower operates automatically when the arc switch, located in the front of the lamp table, is turned on.

A third cooling means is provided by the cooling fan of the driving motor, which draws air up into the shutter housing where a great deal of heat is concentrated and exhausts it through the top of the mechanism. Such an expedient could have been used to advantage in an American projector, the conical-shutter housing of which traps the heat, allowing it to raise the temperature of both the mechanism and the film.

Filters Rarely Used

Heat-absorbing light filters, however, are seldom used in Europe, and are not favored generally by the manufacturers there. Of course in very large theatres and for processes, such as 3-D and various wide-screen projection systems, where high intensity carbons using high amperages are needed then filters are in the "must" category. When the amperage is over 100, and when the temperature at the aperture exceeds 1,200 degrees F., filters are required whether projection be on a European or an American machine.

With low amperages, obviously, filters are not only not needed but are a definite detriment in that they cut light, the amount depending on the type and make of filter used. There is nothing to be gained, the European manufacturers hold, in inserting filters and then raising the amperage to make up for the light loss. Practically the same results can be obtained by simply reducing the arc current. This holds true regardless of the power of the

(Continued on page 42)



Holiday Greetings

from

MOVING PICTURE MACHINE OPERATORS

LOCAL UNION NO. 233
Buffalo, N. Y.

JOHN J. WALSH
President

ALBERT F. RYDE
Business Representative

PERSONAL NOTES

ROBERT O. WHITESELL has been appointed representative of the Hertner Electric Co. in the state of Indiana and



Robert O. Whitesell,
newly appointed
representative
for Hertner
Electric Co.

the area surrounding Louisville, Ky., for the Hertner general purpose motor generator sets, variable-frequency and high-frequency motor generator sets. Mr. Whitesell is a graduate engineer. He was at one time chief engineer of the rectifier division of the P. R. Mallory Co. His headquarters are at 2208 East Washington St., Indianapolis.

PAUL CHRISTMAN, of Ansco's New York office, has been named to the sales force of the company's professional



Paul Christman,
named to new
sales post
by Ansco.

motion picture department. In his new position, he will sell Ansco motion picture products to producers and laboratories in the theatrical, educational and industrial motion picture fields. Mr. Christman joined Ansco in Binghamton, N. Y., in 1942 in the company's precision optics department. In 1950 he was transferred from Binghamton to sales advertising in the New York branch.

F. W. HAMRE, who has held the post of technical service manager in Pittsburgh for the RCA Service Company since 1943, has been named manager of the Chicago district's technical products service division. Hamre will be succeeded in Pittsburgh by H. M. Morrow, formerly RCA field engineer in Johnstown, N. Y.

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NEW YORK OFFICE: 30 CHURCH ST., NEW YORK 7, N. Y.

(Continued from page 31)

head is now replaced by a much smaller one, located entirely at the negative side of the arc, and penetrating the elliptical reflector through a suitably shaped slot. With the metallic reflector used, this proved to be possible without sacrifice of the optical precision.

Figure 5 shows the negative-electrode arrangement, in which a suction pipe picks up the hot arc gases at the inner side of the ring negative. This arrangement permits a very simple design of the negative support and its driving mechanism.

4. As the main reflector, together with the auxiliary mirror, embraces the total solid angle round the arc stream, the front part of the positive head and the main reflector are not directly accessible for inspection and cleaning. For this reason, the whole negative part of the lamp mechanism, including the main reflector, the suction pipe and the negative drive is arranged to swing out around a vertical axis, thus giving the very best accessibility to all the important parts requiring service attention. The suction pipe is designed to go through this axis of rotation, so it need not be disconnected.

5. The blower producing compressed air for the positive head and suction for the negative pipe is arranged at the top of the lamphouse. It is driven very smoothly and silently

Projection, Military Arcs Use Discs

THE SUPER VENTARC projection lamp described by Dr. Gretener in the accompanying article was originally adapted for use in the Eidophor theatre television system being developed for 20th Century-Fox. The principle of the graphite disc negative electrode was used during World War II in powerful searchlights by both the British and German military. Variations of such lamps are now being made for the United States forces.

Military versions of the graphite disc lamps seen by *International Projectionist* do not have the blown arc as in the Gretener lamp. Instead of the ring magnet surrounding the positive carbon, the military lamps have an electric probe to serve the same purpose of "homogenizing" the arc. The military lamps pull some 200 amps, have water-cooled jaws, magazine feeds for the positive carbons and are operated by generators mounted on trucks. Positive carbon consumption is at the rate of one every 20 minutes. Life of the negative disc electrode is about three hours.

The first published reports of the Ventarc were carried by *International Projectionist* as far back as mid-1950. Three articles on the lamp were carried that year, two by Dr. Gretener, in the July and December issues. In IP

for September, 1950, there appeared three short articles touching on the Ventarc mirror system in contrast with the elliptical mirror. These were written by Robert A. Mitchell, by Dr. Gretener, and by Sam Glauber, of Local 306 and a member of the Paramount projection staff in New York.

Dr. C. E. Greider, of the research laboratories of the National Carbon Co., Cleveland, Ohio, read a paper at the October, 1953, SMPTE convention in which he discussed the performance of high intensity carbons in the blown arc as in the Gretener lamp. Results of tests, Dr. Greider said, lead to the conclusion that blown arc operation permits a carbon to deliver considerably more light and to deliver the same amount of light at both a lower current and a lower rate of carbon consumption. A corollary, of course, is less heat at the aperture for a given amount of light.

Earl Sponable, technical chief for 20th Century-Fox, said at the same SMPTE session that the super Ventarc seemed to offer the solution to the problem of supplying the huge amount of light required for CinemaScope projection on very large screens, particularly drive-ins. He added that Fox has plans for an experimental drive-in screen with a width of 135 feet.

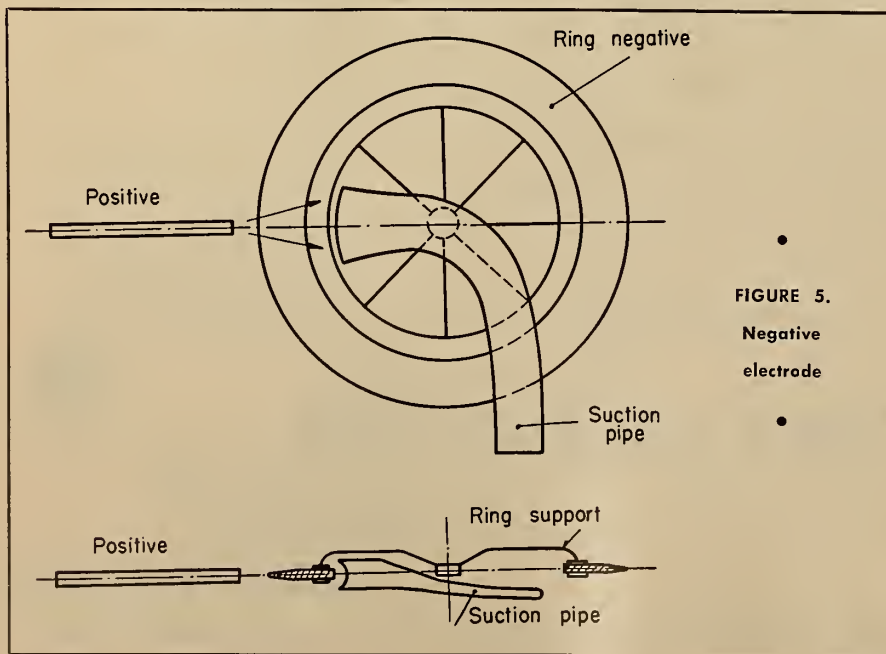


FIGURE 5.
Negative
electrode

by an induction motor. The lamphouse is ventilated by an ejection sys-

tem driven by the exhaust of the suction pipe. This design proved to be more effective and less costly than the ejector system used in 1950. Furthermore, it avoids the necessity of providing additional blowers outside the lamphouse.

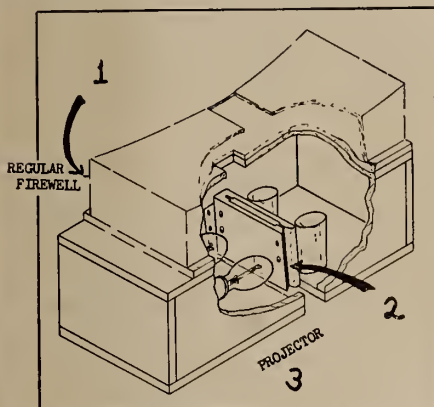
6. The heat filter has been arranged in a slide near the dowser, so that it can easily be taken out for inspection and cleaning.

The main reflector of the Super Ventarc has been enlarged to a diameter of 24 inches. This gives the necessary space for the positive head with the auxiliary mirror, the ring negative and the magazine feed for the positives, without causing any substantial light losses due to shadow masking of the illumination beams.

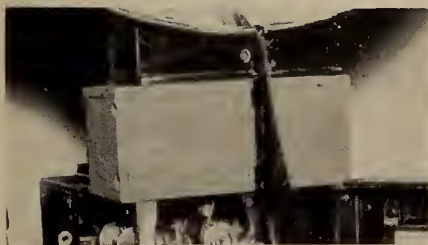
The big lamphouse associated with the 24-inch mirror gives the necessary safety margin for operating the arc, even with extremely high load.

Panaphonic System Is Shown on Coast

New demonstrations of the Panaphonic directional sound system will be held in Hollywood during December, according to Loyd Dorsett, president of Dorsett Laboratories, Norman, Oklahoma. The system, described at length in the October IP, uses darkened intersprocket spaces on the film to cue photoelectric



The line sketch above shows the Panaphonic soundhead described in the accompanying story. Barely an inch-and-a-half high, the Panaphonic optical head, which supplements the regular optical head, reacts to cue marks on the film, thus throwing sound to any speaker or set of speakers desired. In the diagram, No. 1 is the regular firewell below the top magazine, No. 2 shows the slot through which the film passes on its way from the magazine to the projector. No. 3 locates the projector.



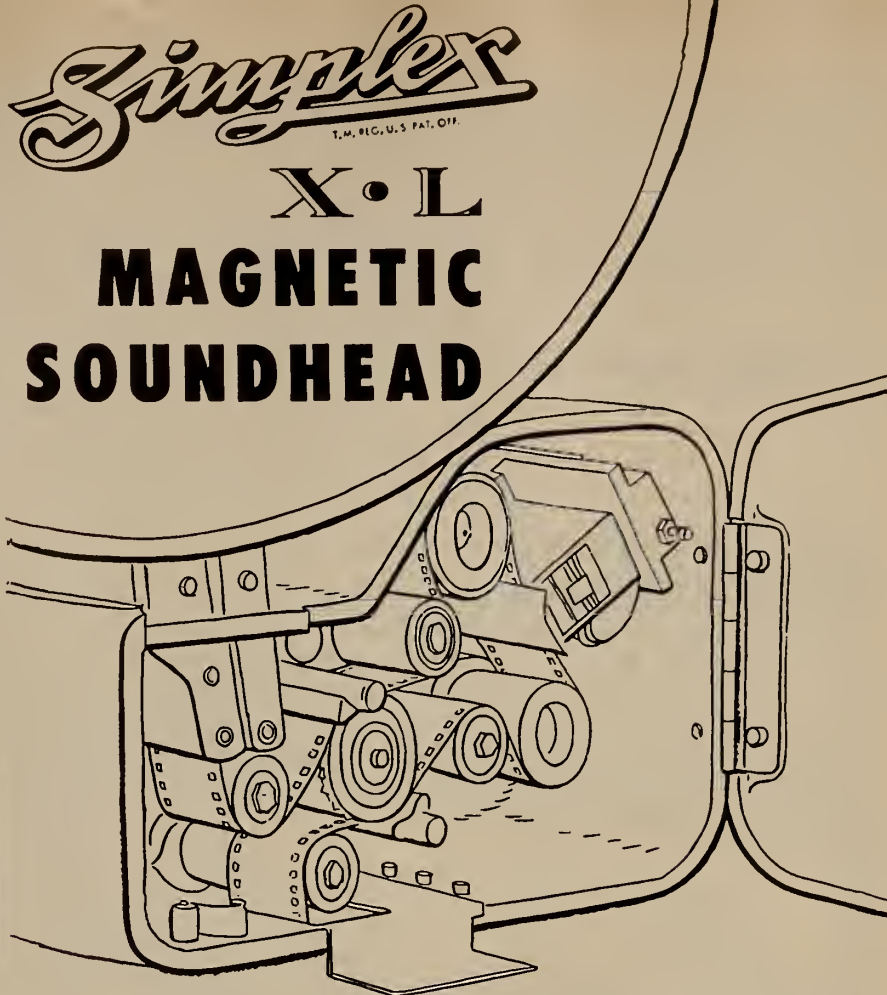
Panaphonic unit in position with a strip of film being threaded into the slot.

cells in a special head and throw sound to any speaker or group of speakers desired.

The Panaphonic system, which the Dorsett people claim is inexpensive and fully compatible with any 2-D picture or with 3-D single strip films, was shown at the convention of the Theatre Owners of Oklahoma earlier this month in Oklahoma City. It was previously demonstrated in Hollywood under the auspices of the Motion Picture Research Council and was shown at the TESMA-TEDA-TOA convention in Chicago. Installations have been made in some 20 theatres in the Southwest.

Approve Reuse of 3-D Viewers

The Chicago Health Department has approved the Stereoptic system of cleaning 3-D viewers for reuse.



Into Simplex Stereophonic Sound have gone the experience and engineering skill of over 30 years. Simplex engineers have been planning, testing and developing—have worked together with the pioneers in magnetic tape recording — have faced the many problems of multi-directional sound — and have come up with the magnetic soundhead and sound system components second to none. That's why

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Bell & Howell Make 'Scope Lenses

ENTRY of the Bell & Howell Com-
pany into the theatre equipment
field was announced at the TESMA-
TEDA-TOA* convention in Chicago, the
first offering being a "new and improved"
35-mm anamorphic lens for CinemaScope
projection. The announcement was made
jointly by C. H. Percy, president of
Bell & Howell, and by Spyros Skouras,
president of Twentieth Century-Fox.

The lens, which Bell & Howell engi-
neers claim is the "sharpest anamorphic
projection lens yet produced," has six
elements with the twelve glass surfaces
matched to master test plates. Accord-
ing to company engineers who worked
with Fox technicians on its development,
the lens has hard magnesium fluoride
coatings on all "air to glass" surfaces
and is so accurately corrected that chro-
matic aberration is completely elimi-
nated.

Limited quantities will be available
this month. Mr. Percy said, with
volume production early in 1954. The
price tag is \$1,900 for a set of two
lenses.

The new anamorphic lens will be
available in mount sizes to fit all exist-
ing projection equipment. Two types

120,000 Color TV Sets

An estimate that 120,000 color tele-
vision receivers would be produced in
1954 was made after a survey of Tv set
sales managers attending the fall meet-
ing of the Radio and Television Manu-
facturers Association this month in
Chicago. Black and white production
during 1954 is expected to be about
5,000,000 sets.

The first lenses designed specifically
for camera use were manufactured in
Paris in 1830.

**A 3-D Christmas
and a
CinemaScopic New Year**

LOCAL NO. 414

Wichita, Kansas

**Greetings to All
LOCAL UNION NO. 253**

Rochester, N. Y.

will be made, one to be used with pro-
jection lenses from 4 3/4 inches focal
length with F/1.8 or F/1.9 apertures in
standard 4-inch barrel mounts. The other
will be used with 3-inch to 4 3/4 inch
focal lengths with F/1.8 or F/1.9 aper-
tures in standard 2.781 (2-25/32) inch
barrel lengths.

While Bell & Howell is a newcomer
to the theatre equipment field, the com-
pany has been a leading manufacturer
of motion picture studio equipment for
the past 46 years and has been active
in the 16-mm and 8-mm fields

* Theatre Equipment and Supply Manufacturers
Association, Theatre Equipment Dealers Associa-
tion, Theatre Owners of America.

Greetings and Best Wishes

LOCAL NO. 204

I. A. T. S. E.

Little Rock, Ark.

**Holiday Greetings
Best Wishes**

from

LOCAL NO. 582

Brantford, Ont., Canada



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types and makes
of film—8-mm, 16-
mm, 35-mm, Tru-
color, Technicolor,
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Fiberglas Reels May Solve Weight Problem

Support for the idea of using lightweight Fiberglas instead of steel for film containers and reels is now being heard from many sections of the motion picture industry. The idea is welcomed by projectionists who must load and unload the heavy film cans used to hold oversize 3-D reels.

An advantage of Fiberglas film cans and reels is reduced shipping charges. According to Claude Ezell, of the Drive-in Theatre Owners Association, exhibitors could save \$10,000,000 annually if

lighter cans were available. With acetate film now used almost universally, it is possible to redesign film containers, he suggests.

At the present time, a standard 35-mm film can weighs from 16 to 20 lbs., and the oversize cans used for 3-D reels weigh 25 lbs. or more. Constructed of Fiberglas, a standard-size film can would weigh about 6 lbs. and the oversize cans for 3-D reels would weigh from 11 to 12 lbs., it was es-

timated by Harry Greenman, manager of the Capitol Theatre, New York City, who is also interested in a company known as U. S. Fiberglass Industrial Plastics, Inc. The company has developed sample models of both Fiberglas cans and reels.

Fiberglas is a tough and durable as well as lightweight material produced from glass. It is a high-quality insulating material, resilient and having high tensile and impact strength. In many applications it is as strong as steel and weighs only half as much as aluminum.

1A ELECTION

LOCAL 306, NEW YORK CITY

Herman Gelber, *pres.*; Al Kunze, *vice-pres.*; Ernie Lang, *rec.-sec.*; Izzy Schwartz, *fin.-sec.*; Abe Kessler, *treas.*; Steve L'Inzillo, *N. Y. C. bus. rep.*; Harry Garfman, *Bklyn bus. rep.*; Herman Stoller, *sgt.-at-arms*; Al Ashkinos, Herman Boritz, Dick Cancellare, Wm. (Bill) DeSena, Frank J. Inciardi, Max Kessler, Frank E. Miller, Tony Rugino, Mike Springer, and Eddie Stewart, *members of the executive board*; Louis Romeo, Al Sprung, Benjamin Stern, *trustees*; Max Aidikoff, Alex Becker, Artie Klein, Max Rosenberg, Phil Shafran, *sick committee*; Nat Doragoff, Chas. F. Eichhorn, Archie Hollander, Sam Kirshenbaum, Morris I. Klapholz, and David Shapiro, *retirement board*. Joseph D. Basson, N. Doragoff, S. D'Inzillo, H. Garfman, H. Gelber, F. Inciardi, A. Kunze, E. Lang, M. Rosenberg, and I. Schwartz, *delegates to 42nd 1A convention*.

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BOXOFFICE TV TESTED

(Continued from page 16)

register a wide variety of admission prices and also announce current and coming attractions to the customer in the home.

Out of 400 Palm Springs homes on the closed Tv circuit, about 75 are participating in the test. On the first day of the demonstration each customer was required to drop \$1.35 in coins into the coin box to see "Forever Female." An afternoon show of



CHRISTMAS GREETINGS

"Ethyloid Film Cement? Sure, I make it, and SELL it. If you use Ethyloid you are using the best. (If you don't, you're missing a good bet!)"

"All theater supply dealers sell Ethyloid from coast-to-coast. It's fast and it HOLDS. No splicing headaches with

ETHYLOID FILM CEMENT

"Sure, I'll send you a sample! Just address a card to Brother Fisher. Test it, and believe me, you'll forget the others and settle for nothing less than Ethyloid for the rest of your life!"

"Ethyloid is now being used in ALL Hollywood studios, and sold 4-to-1 by 93 theater supply dealers. You won't know how good it is until you use it!"

Seasons Greetings to the Fellows in the projection Room

FISHER MFG. CO.,
1 SALTER PLACE • ROCHESTER 13, N. Y.

the University of Southern California-Notre Dame game was priced at a dollar.

The "brain" of the coin box is a magnetic tape which flashes the amount required for each presentation onto a small window in the box and counts off the coins inserted until the fee is paid.

When a customer tunes into a Telemeter channel he sees only the blur of a "scrambled" image unless he pays the fee, but he will hear continuously the tape-recorded voice of an announcer or "barker" telling him what's on, how much it costs and whether the performance will be repeated and when. If the customer decides to buy and deposits the coins required, the picture unscrambles, the barker goes off the air so far as that set is concerned, and the proper sound and dialogue are automatically tuned in.

A slightly fantastic but potentially important feature of the system is the fact that a button can be installed on the coin box which will enable the home Tv audience to "talk back" to whoever is on the screen. What the button actually does is to enable the viewer to register "yes" and "no" answers to questions directed at him over Tv.

Magnetic Tape Used

The answers, recorded on magnetic tape in the coin box, would be picked up regularly by a serviceman who also

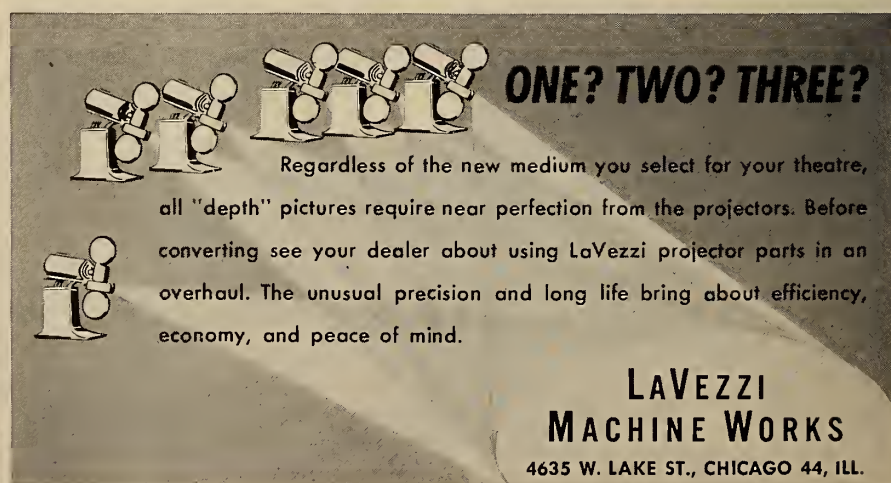
removes money from the box. Presumably, the button arrangement would make possible the taking of straw votes over the air, and the giving of aptitude tests and exams. The viewer would not be able to cheat because the tape would record not only his answer but also the time it takes to arrive at it.

So far as the immediate practical side of the Telemeter system is concerned, opinion differed among observers who went to Palm Springs for the first day of the test. It was felt by some that "Forever Female" was not the best choice for starting the test. A comedy is enjoyed most with a large responsive audience rather than when being viewed by a few people at home. Also it was noted that Tv reproduction tended to blur or wash out detail in backgrounds and longshots.

While nearly everyone agreed that the Telemeter system held great promise for the future, it was also remarked that it would face enormous manpower and economic problems if used on a wide scale rather than a small test area. Large numbers of collectors, maintenance men, and bookkeepers would be required.

TV Sets Record

Production of television sets hit a new high of 3,824,236 units in the first half of 1953 according to a report issued by the Radioelectronics Television Manufacturers Association.



ONE? TWO? THREE?

Regardless of the new medium you select for your theatre, all "depth" pictures require near perfection from the projectors. Before converting see your dealer about using LaVezzi projector parts in an overhaul. The unusual precision and long life bring about efficiency, economy, and peace of mind.

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NEW PROCESS SPLICING

(Continued from page 12)

ice long after they have become dull and ineffective in their ability to remove the binder between the emulsion and the film base.

"Sandpaper or emery cloth, while admittedly very effective, should not be used for scraping, because the grit particles will be picked up by oily film and carried into the roll. Such particles not only cause serious surface abrasion but may find their way into projector bearings."

For a final treatment after the blade has been used, Eastman Kodak also recommends a fine wire brush such as the one mentioned earlier in this article. A few sweeping strokes of this brush after scraping will give the desired dull surface even though the blade has not been too effective.

"Satisfactory splices demand careful scraping, which means complete removal of the emulsion and binder coatings. On certain types of color films where these coatings are on both sides of the film, scraping of each of the surfaces to be joined is required. In any case, the surface on the back of the section to be joined should be thoroughly clean. If the back surface contains only a slight film of oil, some difficulty will be encountered in obtaining successful splices. In many cases, this factor is overlooked and poor splices are falsely attributed to the particular cement used, the splicing equipment, or the film base itself.

"Sometimes it is helpful to roughen the back surface slightly where certain films seem to resist satisfactory splicing. Another effective technique is to apply a very small amount of cement to the back surface and to wipe it off immediately. This acts as a primer coating preliminary to the actual splicing operation, and aids in obtaining thorough adhesion of the two surfaces."

The Kodak instructions emphasize again that care must be taken to avoid excessive use of cement, and also that it is important to allow sufficient holding time under equalized pressure in the clamps. For triacetate safety film, about 10 to 15 seconds is recommended. It is also suggested that the spliced film be afterwards rubbed slightly with a cloth to seal the cut ends. The movement of the cloth should be across the film and never in a direction parallel to the length of

the film.

"A good splice is actually a weld, one section of the film being partly dissolved into the other. It is important to bring the two surfaces under pressure as quickly as possible after application of the cement. If the left clamp of bench-top splicer is raised slightly when the cement is applied, a cleaner back surface will be obtained, since the cement will be then less likely to flow under the film. This will greatly reduce the possibility of distortion in the spliced area when the cement has dried."

Cements are now available, Kodak states, which will do a good job on both acetate and nitrate film bases if instructions are followed. Fresh cement should always be employed and used cement in bench bottles should be cleaned out regularly and filled with new cement.

"Poor splices attributed to the particular brand of cement being used, or the characteristics of the film, may in most cases be explained by lack of attention to details covered in the above paragraphs," Eastman Kodak concludes.

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PROJECTION IN EUROPE

(Continued from page 34)

arc-lamp, for when currents in the neighborhood of 100 amperes are employed, heat filters *must* be used, although very similar results can be effected, with a substantial saving in current and carbon costs, by reducing the arc current.

The truth of the matter is that visible light, especially the red end of the spectrum, is also heat producing. A filter which removes all of the invisible infrared and lets all of the visible light pass cannot possibly remove more than a fraction of the heat of the arc beam. Moreover, the size of the frames on 35-mm soundfilm is small, limiting the amount of light which the film can accept without buckling it out of shape and blistering the photographic emulsion. In general, arc amperages in excess of 85 or 90 amps. quickly ruin film and introduce flutter into the projected pictures. This flutter takes place so rapidly that it looks like an out-of-focus image on the screen.

Projection Lenses

However, for the process known in the United States as CinemaScope, in which a vast amount of light has to be poured on the screen, Ernemann has devised an ingenious lens arrangement. This is a little lens of heat-resistant glass mounted just behind



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the aperture. This lens decreases the spread of the light beam as it emerges from the aperture, thus insuring that all light passes through the central portion of the projection lens. This increases brilliance of the picture. Though the manufacturers don't say so, it also enables smaller (slower) lenses to be used with no attendant loss of light. As is well known, F/2.5 and F/3.0 lenses are much cheaper to make than the fast F/1.9 or the F/1.8 lenses of top quality and possess greater depth of focus and possibly better resolving power.

The projection lenses usually furnished by Ernemann dealers are the modern Zeiss Ikon Kinostar and Kipronar anastigmatic F:1.9 hard-coated lenses. In addition to these, which are furnished in a wide range of focal lengths, the Zeiss Alinar short-

focus lenses, as well as the Meyer Trioplan and Busch Neokino objectives, are widely used in Europe. It is worth mentioning that the manufacturer claims that the bugbears of extremely short focus lenses have been expelled from the Alinar series, the performance of these lenses being equal to that of high-quality F/1.9 lenses of longer focal length.

It is of interest to note that antireflex-coated port glasses are widely used in Germany, to a far greater extent than in the United States, to increase the brilliance, contrast, and definition of the projected picture.

The lower film loop in German projectors is somewhat smaller than in American machines, and the film contacts a greater portion of the circumference of the intermittent sprocket. This construction has the advantage of decreasing side-sway of the picture, reducing the noise and instability of the lower loop, and lengthening the life of the film.

The next (January) article will discuss current European methods of sound reproduction, both optical and magnetic, and will also discuss projection lamps.

(TO BE CONTINUED)

OBITUARIES

CHARLES KELLNER, 60, member of New York Local 306 and chief projectionist at RCA's Johnny Victor Theatre in New York City, died suddenly November 16 of a heart attack. Obligated by Local 306 in September, 1925, he had a long and interesting career in the projection field.

From 1929 to 1947 Kellner was chief projectionist at the RCA Studios, 411 Fifth Avenue, New York City, transferring to the Johnny Victor Theatre when it opened in April 1947.

He served as president of the Projectionists Square Club of Greater New York, was vice-president of the New York State Association of Masonic Square Clubs, and held membership in Dirigo Lodge, AF & FM. Surviving are his wife Rose, two daughters and three grandchildren.

MAX HOLLANDER, retired member of Local 306, New York and of Stagehands Local No. 1 died November 22. He was over 70 and had been retired since 1944.

New Film in Three Languages

Not three dimensions but three languages was the feature of the first-run engagements for the "Little World of Don Camillo" in Washington, D.C. The picture opened in English at the Silver Spring Theatre, in French at the Plaza, and in Italian at the Little Theatre.

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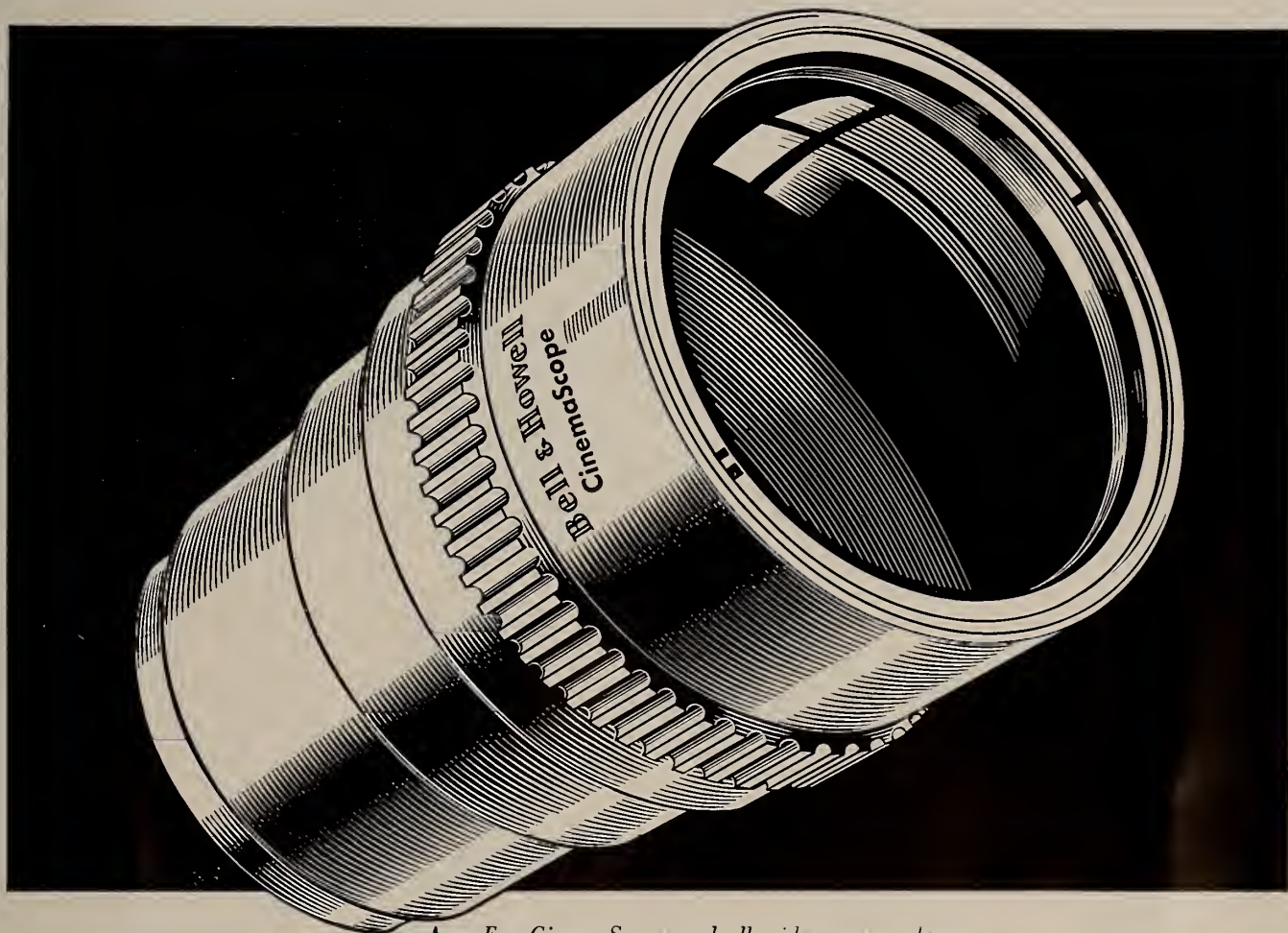
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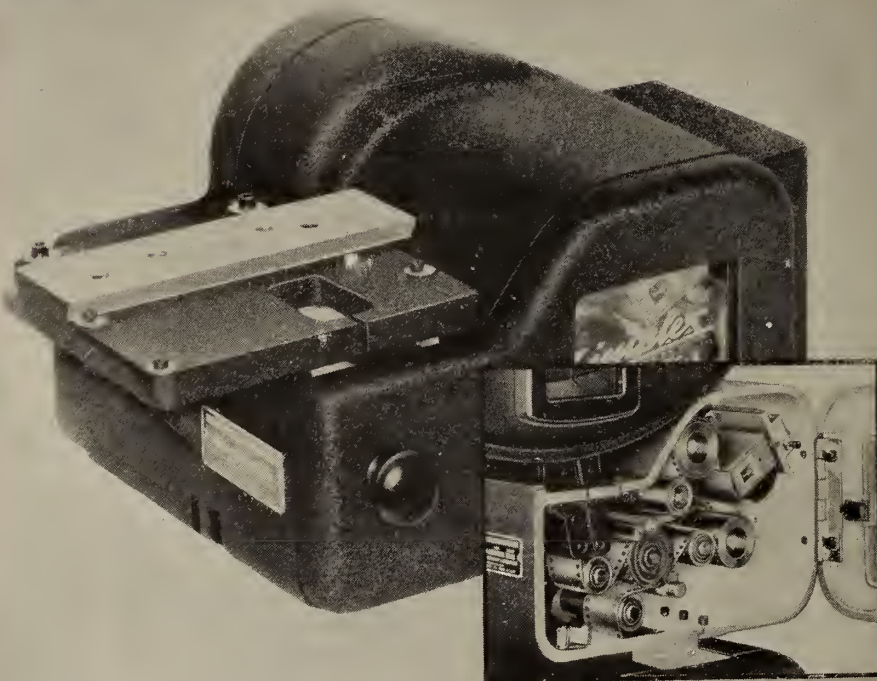


For full information see your local theatre supply house.

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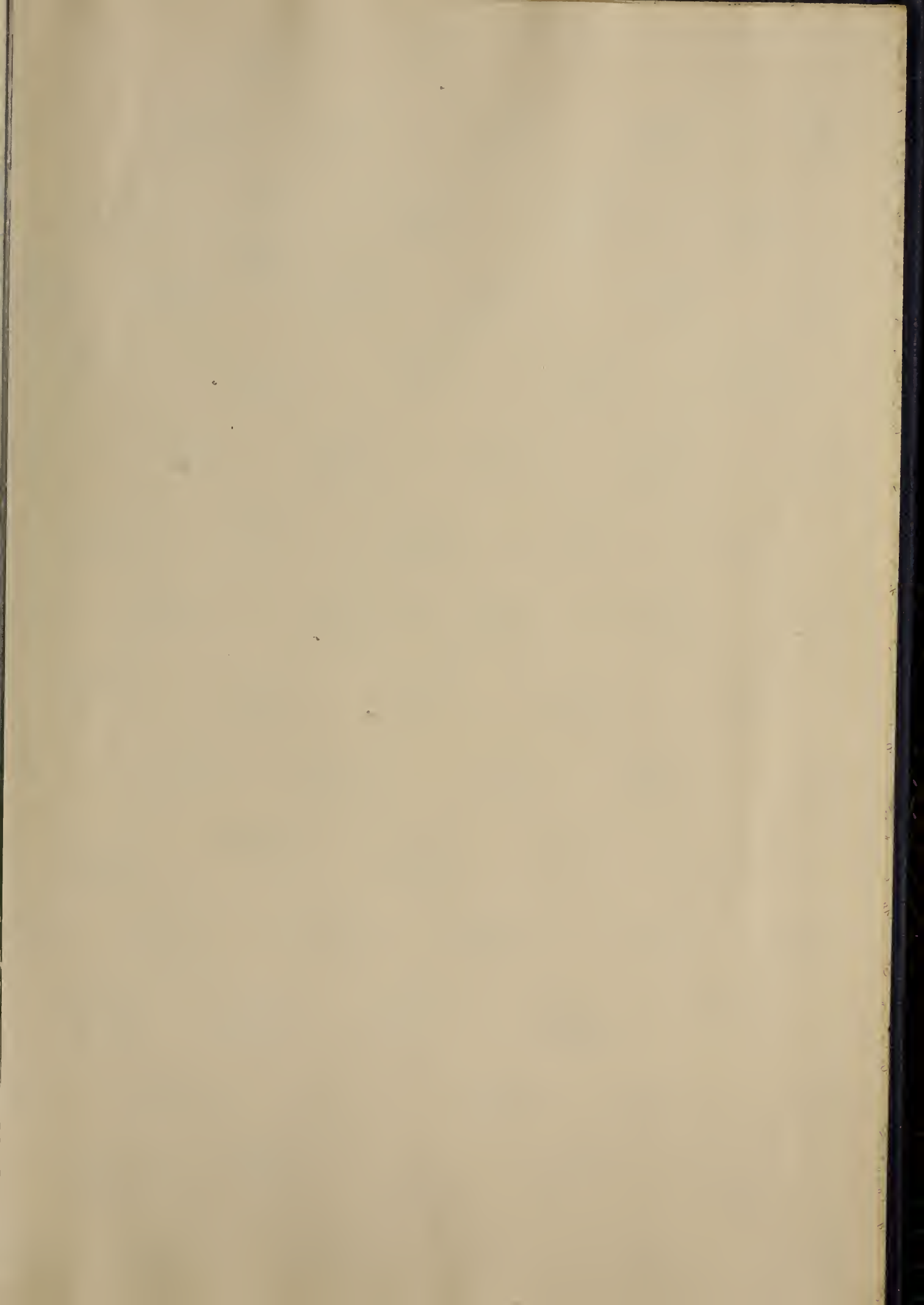
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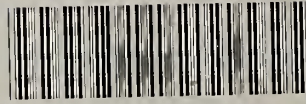
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